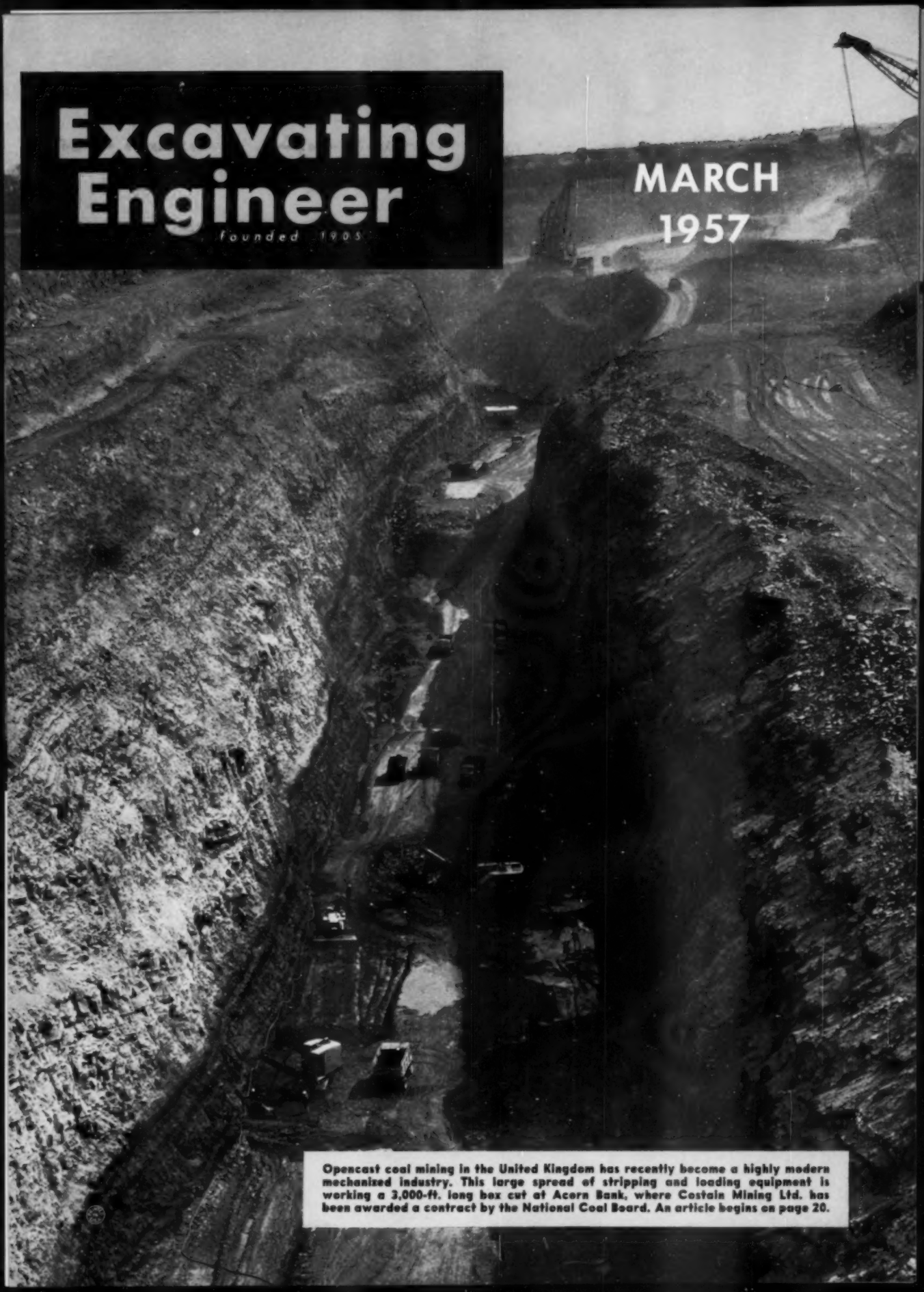
Excavating Engineer

founded 1905

MARCH
1957



Opencast coal mining in the United Kingdom has recently become a highly modern mechanized industry. This large spread of stripping and loading equipment is working a 3,000-ft. long box cut at Acorn Bank, where Costain Mining Ltd. has been awarded a contract by the National Coal Board. An article begins on page 20.

Fast, Full Loading

Smooth, Clean Carrying

Rapid, Free Dumping

Give Your Dragline Extra Output Ability with an *All-New*

Bucyrus-Erie DRAGLINE BUCKET

You can count on bonus output ability from your dragline when the boom carries a Bucyrus-Erie New-Design Bucket.

Engineered For Extra Output — The thin "slicing action" lip, with properly pitched teeth and cutting edge, penetrates even the toughest materials quickly. The basket is shaped for fast, full loading. Proper flaring and balance minimize bobbing and spilling. The smooth, inside design of the bucket and the extra-high arch assure clean, fast dumping.

Built For Extra Service — BECOLOY is the new steel alloy developed by Bucyrus-Erie metallurgists especially for dragline buckets. Its fibrous structure assures high impact and shock resistance even at low temperatures. BECOLOY's greater strength per pound lets you swing more payload — less deadweight every hour. It is readily weldable and is magnetic. It can be cut with an acetylene torch for easy field maintenance.

All-new Bucyrus-Erie buckets are available in a wide range of sizes for light, medium or heavy duty work — with either solid or perforated baskets. Call your Bucyrus-Erie distributor. Let him help you choose the right bucket to give your dragline extra output ability. 23B57C

BUCYRUS ERIE

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

ROLL UP PRODUCTION *with help like this . . .*

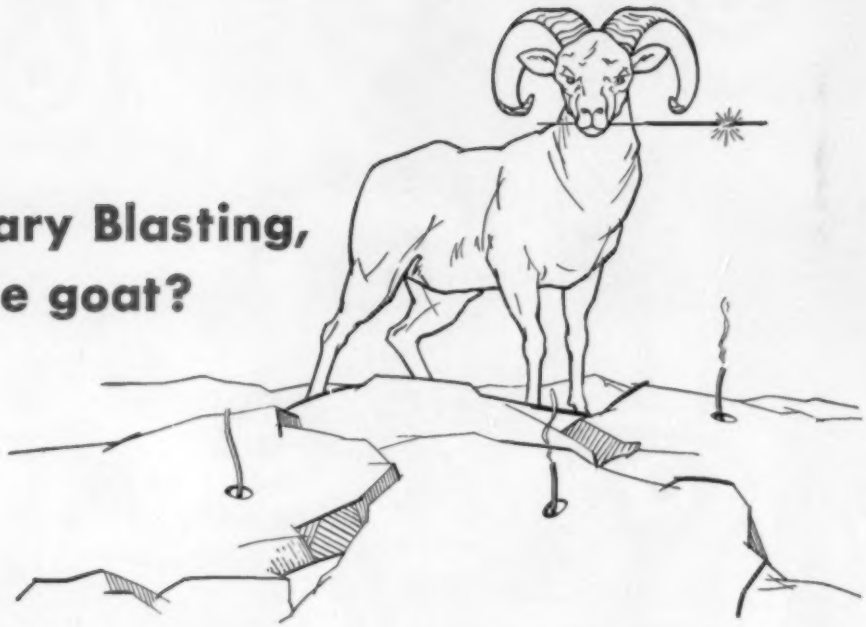
- **EXCLUSIVE "ROLL-AWAY" MOLDBOARD . . . moves tough dirt fast**
- **NEW TOGGLE-TYPE CONTROL . . . kick-free in the rough . . . pinpoint accuracy at the blue-tops**
- **HIGHEST AXLE AND THROAT CLEARANCE in its class . . . for better handling of biggest loads**
- **TOUGH TUBULAR FRAME . . . shock-absorbing strength down the middle**
- **BOX-SEAT COMFORT AND VISIBILITY . . . satisfied operators . . . more and better work done on all grading jobs**

ROLL-AWAY is an Allis-Chalmers trademark.

These are five of many reasons why Allis-Chalmers FORTY FIVE motor graders are showing up in more and more top construction organizations. They're precisely what you dirt-moving specialists ordered . . . ready now to help you handle the big road-building years ahead. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

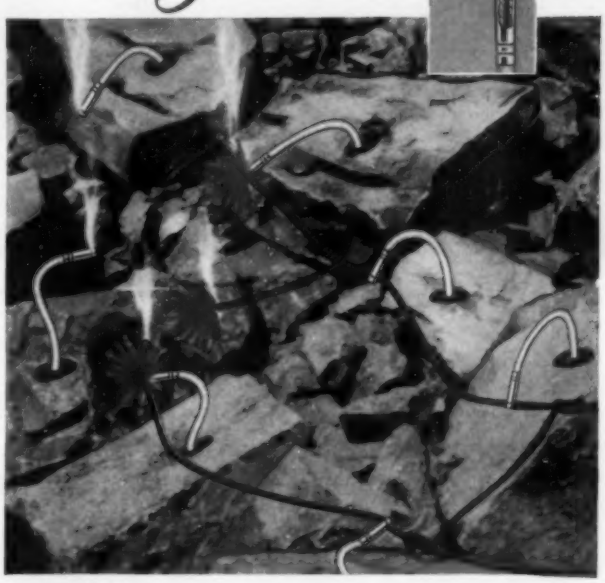
In Secondary Blasting, why be the goat?



. . . when you can play-it-safe with *Quarrycord*

You play-it-safe three ways when you use safety fuse and Quarrycord in your secondary blasting:

1. You can ignite each and every fuse *from one remote point* and eliminate the hazard of men climbing over the rock pile.
2. You gain the advantage of *fuse* blasting — "pop-pop-pop" instead of "boom!"
3. You fire when ready, without danger from stray electrical currents from equipment or thundershowers.



Quarrycord looks like colored twine. It is soft, pliable — easily lighted with a match and burns with an open flame at the rate of about one foot per second.

It's easy to use. Cut your safety fuse in equal lengths. On the end of the fuse opposite the cap place a Quarrycord Connector. This is a copper tube containing an ignition compound. The end is slotted to hold the Quarrycord securely.

After loading the holes, connect each fuse with Quarrycord, and make cross connections wherever a short cut will get the flame to the fuse in less time.

Run the end of the Quarrycord to a place where it can be lighted easily — light it with a match and go to a place of safety.

This folder tells the whole story: what Quarrycord is, how to use it and what it can mean to you in greater safety and lower costs in secondary blasting. We have a copy waiting for you — it's free.

For more information see your explosives supplier or write to

Q-1

THE ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut • Since 1836

Primacord® Detonating Fuse, Safety Fuse, Ignitacord®, Quarrycord, Pyrotechnical Devices and Blasting Accessories

Advertisers
IN THIS ISSUE

Allis-Chalmers Mfg. Co. 1, 55
Atlas Instrument Co. 57
Aveling Barford Ltd. 53
Bell & Gossett Co., Marlow Pumps Div. ..... Cover IV
Bethlehem Steel Co. 12
Bucyrus-Erie Co. ..... Cover II, 13, 18–19, 57, 61
Caterpillar Tractor Co. ..... 10–11, 63, Cover III
Colorado Fuel & Iron Corp. 47
Contractor's School 60
Drake-Williams Mount 68
Eimco Corp., The 59
Ensign-Bickford Co., The 2
Euclid Div., General Motors Corp. 5, 9
For Sale (Classified) 67
General Motors Corp., Euclid Div. 5, 9
Hayward Co., The 54
Hendrix Mfg. Co. 4
International Harvester Co. 14–15
Kiesler, Jos. F. Co. 51
Leschen Wire Rope Div., H. K. Porter Co., Inc. 41
LeTourneau-Westinghouse Co. 7, 17, 43, 65
Mack Trucks, Inc. 49
Macwhyte Co. 6
Manitowoc Engineering Corp. 8
Marion Power Shovel Co. 44–45
Marlow Pumps Div., Bell & Gossett Co. ..... Cover IV
Phoenix Products Co. 56
Porter, H. K. Co., Inc., Leschen Wire Rope Div. 41
Roebling's Sons Corp., John A. 47
Salem Tool Co., The 52
Sauerman Bros., Inc. 64

Excavating Engineer

founded 1905

South Milwaukee, Wisconsin

CONTENTS

Volume 51 No. 3 **March, 1957**

English Develop Opencast Mining—by T. W. Broughton 20
Coal stripping has become a well-organized, mechanized industry during last five years.

Engineers Build to Tame 'Ole Miss'—by Major General John R. Hardin 24
River project in Louisiana will prevent Mississippi River from abandoning present course in favor of shorter route to Gulf. Concrete control structures, earth dam and levees will be built.

Homemade Explosives Can Be Dangerous 29
Special hazards report issued by association of insurance companies lists some undesirable practices occasionally used by powdermen in storing and handling "do-it-yourself" explosives.

They're Building an Earthmoving Business—by Ray Day 30
Good management and equipment selection parlay the small business of S. D. Spencer & Son rapidly into a thriving contractor status. Firm's specialty is moving dirt in a hurry.

Seen at the Road Show 38

News from the Field 40

Beavers Honor Eleven 40
Stranded Dragline Goes to Work 40
Weiss Leaves Imperial Valley 41
Spectacular Timber Dome 42
Asphalt Grades Reduced 42
Caterpillar Expands 46
Name Cement Assn. Engineer 46
Foreman to Retire from AGC 48

Obituary—Iley P. Payne 46

Equipment You Ought to Know About 48

Not in the Contract 62

New Trade Literature 66

Notes from the Manufacturers 68

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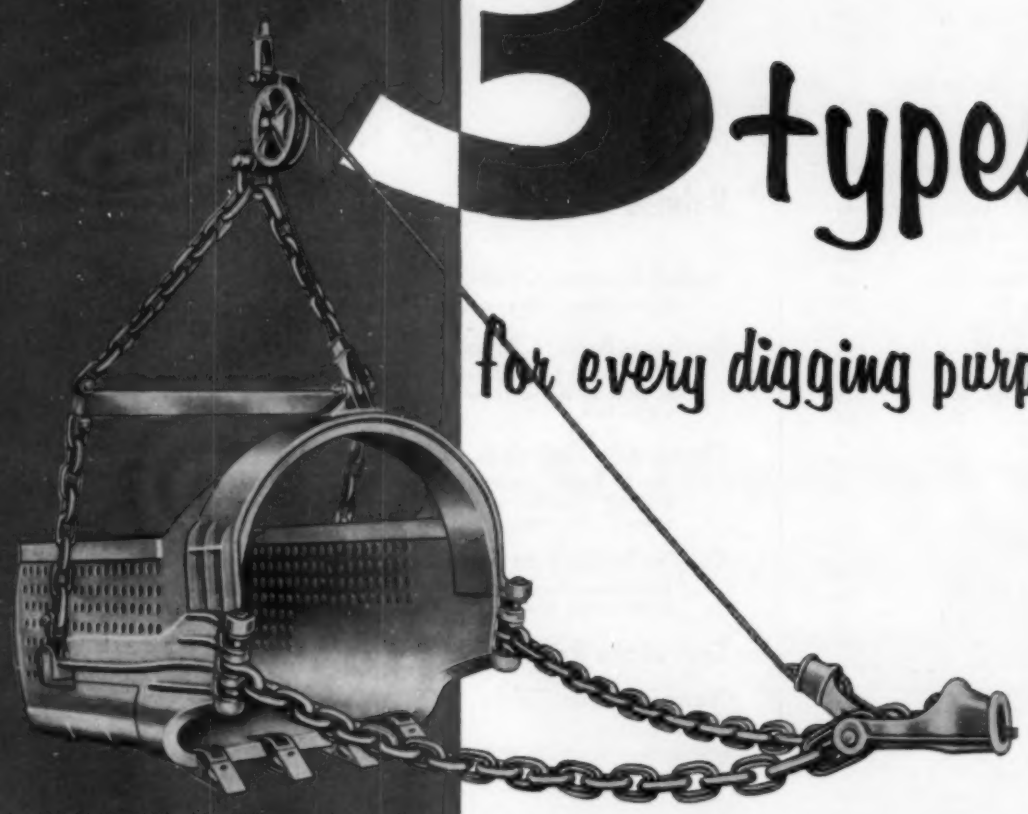


All Hendrix Buckets available without perforations

¼ to 40 Cubic Yards

Hendrix Lightweight DRAGLINE BUCKETS

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA

TYPE "LS" . . . *Lightweight*

A lighter weight bucket designed for levee and drainage work

TYPE "TS" *General Purpose*

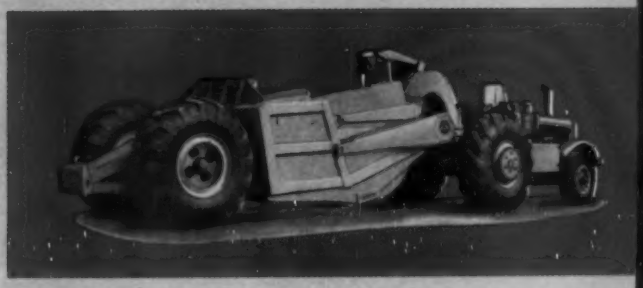
Unexcelled for Medium-Duty Service

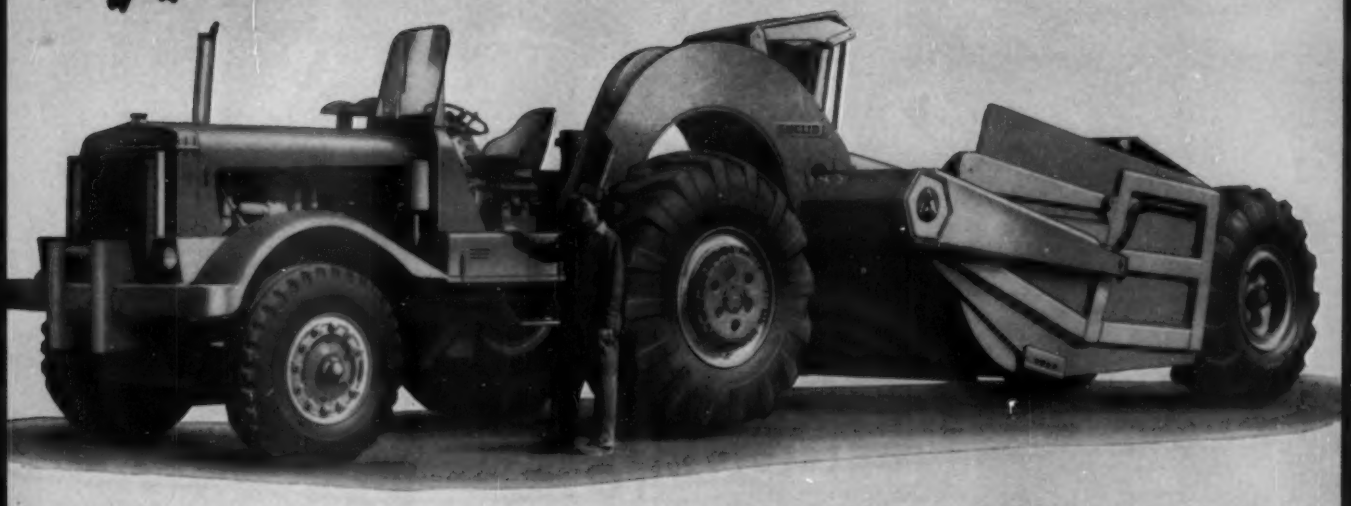
TYPE "HS" . . *Heavy Duty*

A heavy-duty bucket for moving shale, blasted rock and other hard formations

Here's the NEW *SS-24* "EUC" SCRAPER

32 Yards HEAPED!





Increased Production for high speed, long haul jobs

Euclid's new Model SS-24 has a struck capacity of 24 cu. yds. . . . carries up to 31 yards heaped at 1:1 slope . . . is available with either a 300 h.p. or 335 h.p. engine.

New Allison Torqmatic Drive with four speed ranges provides plenty of torque in lower ranges to meet the requirements of heavy loading and soft fills, yet permits high travel speeds for fast hauls. Shifting under full power without loss of momentum reduces cycle time.

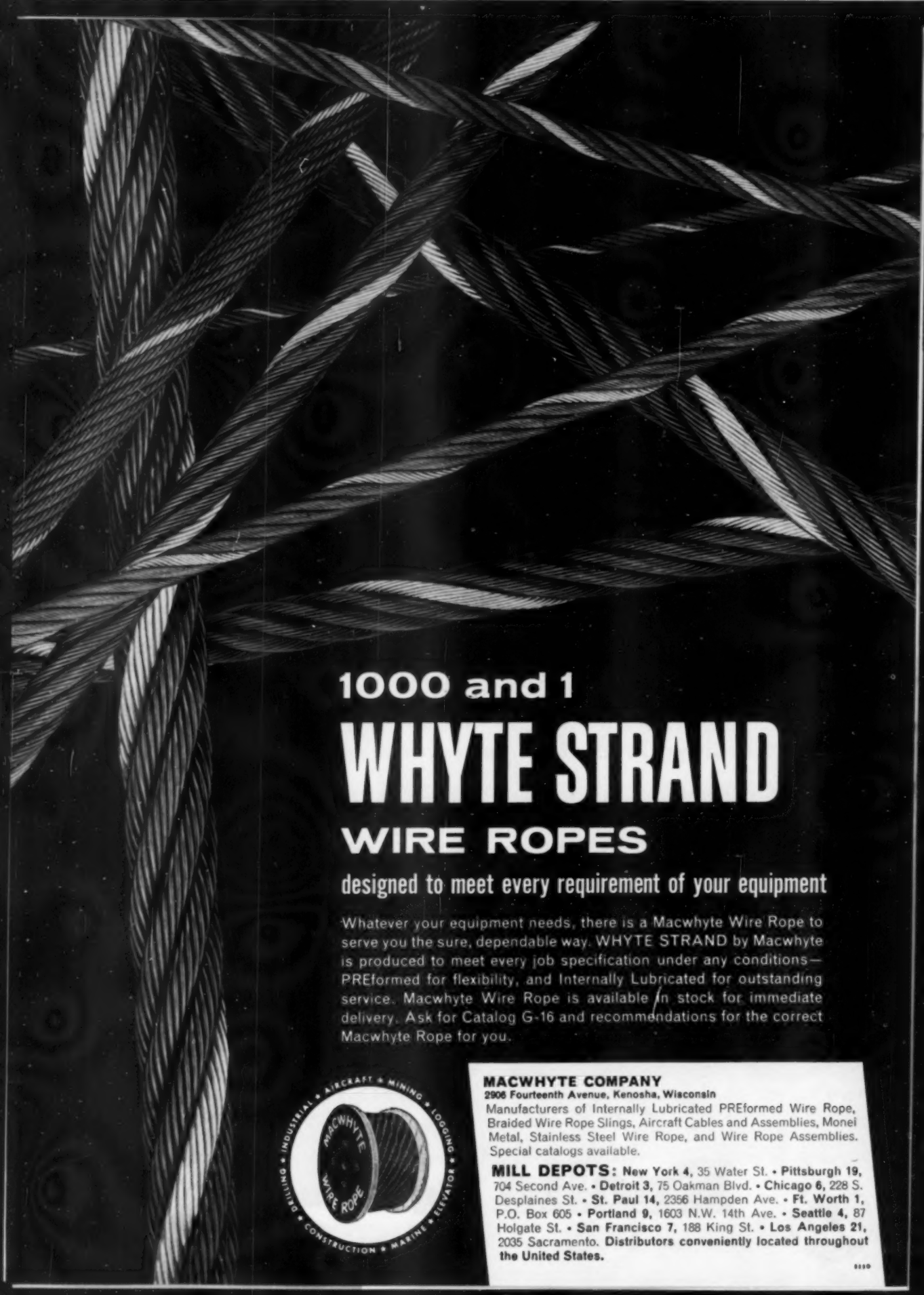
Six wheel design of this SS-24 gives it exceptional stability for long fast hauls. It is equipped with rugged, job-proved Euclid planetary drive axle and 27.00 x 33 drive and scraper tires (33.5 x 33 are optional). Euclid hydraulic lever control of all scraper operations eliminates down-time and expense resulting from cable breakage. The cutting blade's four sections are interchangeable and reversible, providing straight and drop-center arrangements and longer blade life in any material.

See your Euclid dealer for more information on this big new scraper and the complete line of Euclid earthmovers . . . he can show you why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



1000 and 1

WHYTE STRAND

WIRE ROPES

designed to meet every requirement of your equipment

Whatever your equipment needs, there is a Macwhyte Wire Rope to serve you the sure, dependable way. WHYTE STRAND by Macwhyte is produced to meet every job specification under any conditions—PREformed for flexibility, and Internally Lubricated for outstanding service. Macwhyte Wire Rope is available in stock for immediate delivery. Ask for Catalog G-16 and recommendations for the correct Macwhyte Rope for you.

MACWHYTE COMPANY
2906 Fourteenth Avenue, Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies. Special catalogs available.

MILL DEPOTS: **New York 4,** 35 Water St. • **Pittsburgh 19,** 704 Second Ave. • **Detroit 3,** 75 Oakman Blvd. • **Chicago 6,** 228 S. Desplaines St. • **St. Paul 14,** 2356 Hampden Ave. • **Ft. Worth 1,** P.O. Box 605 • **Portland 9,** 1603 N.W. 14th Ave. • **Seattle 4,** 87 Holgate St. • **San Francisco 7,** 188 King St. • **Los Angeles 21,** 2035 Sacramento. **Distributors conveniently located throughout the United States.**

Moving fast, this 123 hp "550" keeps pit floor clean, blades off loose dirt and rocks. Smooth access saves wear on haulers' tires. Regular clean-up, improved drainage, prevents dirt and refuse from weathering into levels of pit floor.

9 WAYS

to increase pit output and cut cost per ton

You may think of your grader simply as a maintenance tool. But in the hands of a good operator, a versatile, modern high-speed grader actually steps up mine and quarry production, and cuts operating costs. Check these 9 big ways increased grader capacity can boost profits.

1 Regular, more frequent maintenance of haul roads—smooth roads speed hauling, save tire wear, cut hauler down-time, improve safety.

2 Quick clean-up after blast—grader provides a fast, inexpensive way to move scattered fragments back against toe—thus protecting men, machinery, tires and other equipment working around pit, speeding up all pit operations.

3 Clean pit floors—regular routine of maintaining wide, clean traffic-ways that make all areas of pit or quarry quickly accessible, pays off. Equipment can always travel to any assignment by shortest route. Regular clean-up, improved drainage, prevents dirt and refuse from weathering into ore or coal below floor.

4 Maintain good housekeeping around plant—you need ample grader capacity to keep roads, runways, working areas around plant neat, clean, and workable at all times. Grader quickly and efficiently levels or removes the occasional spill left by heaped trucks...from around grizzlies, conveyors, trestles. A clean plant area speeds mobile equipment operation, reduces dust.

5 Keep stockpile toes pushed in—weather and loading operations result in spread of toes around stockpile. This limits working space, wastes stored material. Also, working thinly-spread toes down-grades material, increases loading cost.

6 Keep dumps smoothly spread and level—regular grader service can spread dumped material clear over edge. Offset blade reaches far out beyond wheels. A smooth, level, dry, dump speeds both hauling and dumping, cuts equipment costs. Grader can easily smooth haul road as it travels to and from the dump.

7 Clean ore benches of washed-down dirt—every rain washes dirt into upper benches, lowers quality of mined material. Prompt grader service halts "wash", provides planned drainage, piles washed-in material for easy removal by scraper or truck.

8 Assist exploration teams—a modern grader can build a well-graded and drained roadway in a matter of hours...speeds exploration work by maintaining good roads for hauling men and equipment.

9 Keep drainage open—with just a few hours work per week, a modern grader will keep ditches clean ...provide fast run-off, preventing seepage of dirty water into pit bed. Planned maintenance eliminates erosion of haul roads, keeps trucks and shovels operating on dry footing.

Check capacity of *your* present graders

It will pay you to re-assess the role and capacity of your present graders. If your machines are more than a few years old, you will probably realize a substantial increase in grader productivity by replacement with modern, fast, powerful, big-capacity graders. Call or write for full information on Adams heavy-duty graders. Six models: 190, 150, 123, 104, 80, and 60 hp. Choice of GM or Cummins engines on 5 larger models.

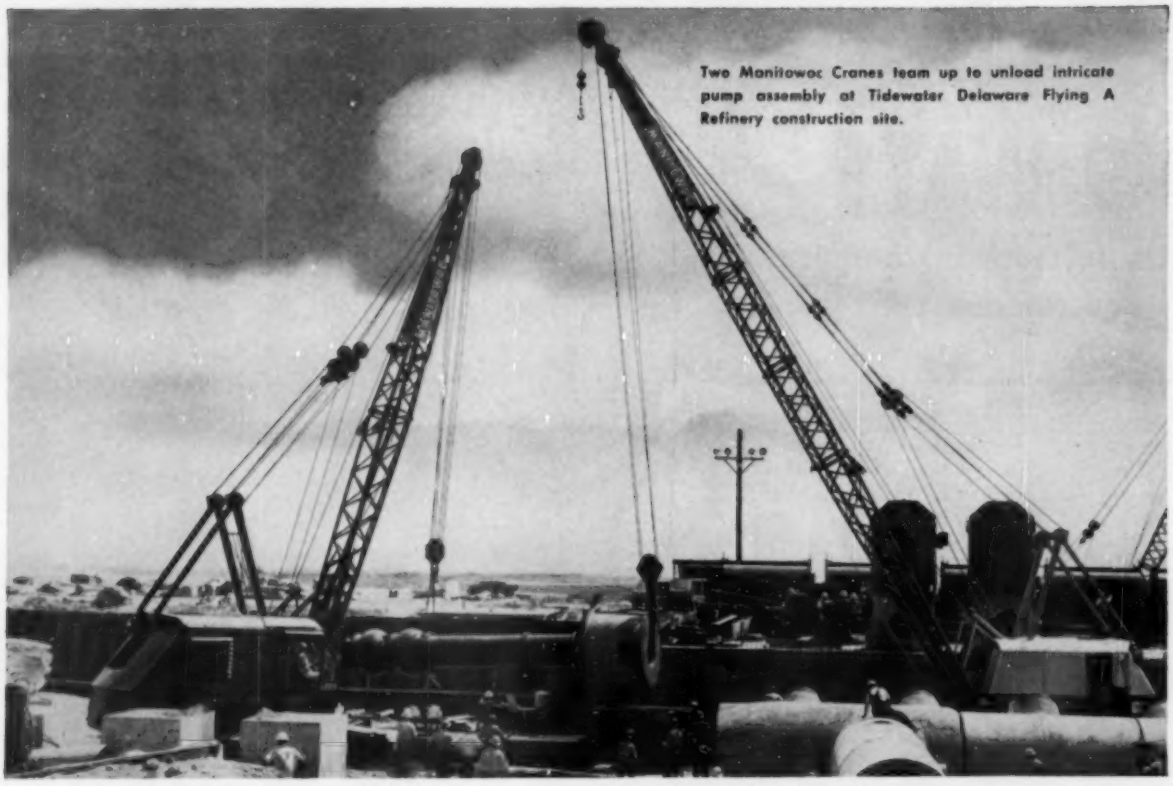
This 150 hp Adams 660 grades haul roads, at speeds to 6.5 mph, in 4th gear. Unit smooths surface for high-speed movement of production haulers. Travel speeds to 26 mph.

Adams — Trademark AG-1352-M-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT



Two Manitowoc Cranes team up to unload intricate pump assembly at Tidewater Delaware Flying A Refinery construction site.

24 Manitowoc Cranes Help Raise Giant Tidewater Oil Refinery

A total of 24 Manitowoc Cranes is working on the erection of the huge new Tidewater Oil Company Delaware Flying A Refinery near Delaware City, Del. Covering 5000 acres, the ultra-modern refinery will be the biggest built at one time as a single unit, with an expected throughput of 130,000 barrels of oil per day.

C. F. Braun and Co., Alhambra, Calif., designers and engineers for the project, is also handling actual construction of the refinery. The Braun Co. is using 22 Manitowoc crawler cranes, and two Manitowoc Mobile Cranes, units ranging in capacity from 40 to 80 tons, with booms 60 to 120 feet long.

A tremendous variety of jobs are handled by the Manitowocs. Some of the work includes: unloading freight cars, stacking incoming materials, transporting machinery to the construction site, pouring concrete, erecting scaffolding and rigging poles, setting steel, erecting 250 miles of elevated pipeline, laying underground conduits and setting high velocity water pumps on foundations.

Machine downtime on the Tidewater project has been negligible, with no holdup of work due to breakdowns . . . a real testimonial to the ruggedness and solid engineering for which Manitowoc cranes are famous!

Your Manitowoc Distributor will be glad to supply all the details on Manitowoc's versatile line of cranes and excavators — call him today!

MANITOWOC ENGINEERING CORP.,
MANITOWOC, WIS.

What the Men on the Job Think of Their Manitowocs!

"For steel erection you can't beat Manitowoc. One of the finest machines on the market."
Don Rossillo, Crane Operator

"The 2800 is the best motor crane on rubber that was ever made. It will pick up 20 tons without an outrigger and walk away with it."
Jack Streets, Ironworker's Foreman

"For hooking rigs, setting steel, or pouring concrete, Manitowocs can't be beat. And they stand up very well. Been working here an 8 hour day, 5 day week for about ten months and have never been down a minute for repairs."
R. L. Slater, Operator

"This mobile model 2800 is one of the best cranes for all-purpose work. They are strong and smooth running, both on the hoisting and the travelling on the road. Best machine I ever ran, truck or cat."
Prince A. Congleton, Operator

"Sturdiest truck crane on the market, and I've run them all."
Harry Racine, Operator

MANITOWOC
SHOVELS 1 - 5½ YD. Speed Crane CRANES 20-100 TON

HERE'S THE *NEW* EUCLID

TS-24 TWIN-POWER SCRAPER

31 YARDS HEAPED—24 YARDS STRUCK • 518 H.P.—ALL WHEEL DRIVE
TORQMATIC DRIVES—NO CLUTCH—FULL POWER SHIFTS

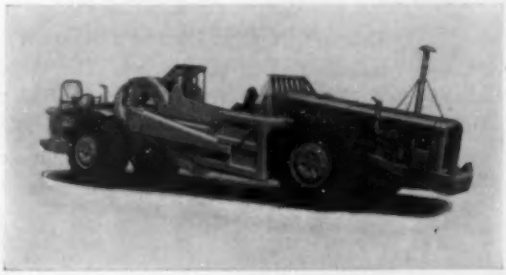
Here's a one-man earthmoving spread that moves more yardage at lower cost than any other scraper. It incorporates all of Euclid's scraper design features—hydraulic lever action, a low, wide, easy loading bowl, the 4-section cutting blade that's reversible and adjustable, and unequalled accessibility for servicing.

With a total of 518 h.p. and two Torqmatic Drives the Twin-Power TS-24 self loads in any scraper material—can work independent of other equipment. It's big but highly maneuverable and easy to operate, with power and traction to work under conditions that stop other scrapers.

Ask your dealer for proof that this new Euclid TS-24 Scraper can set new production records at lower cost on your jobs—and have him show you why ***Euclids are your best investment.***

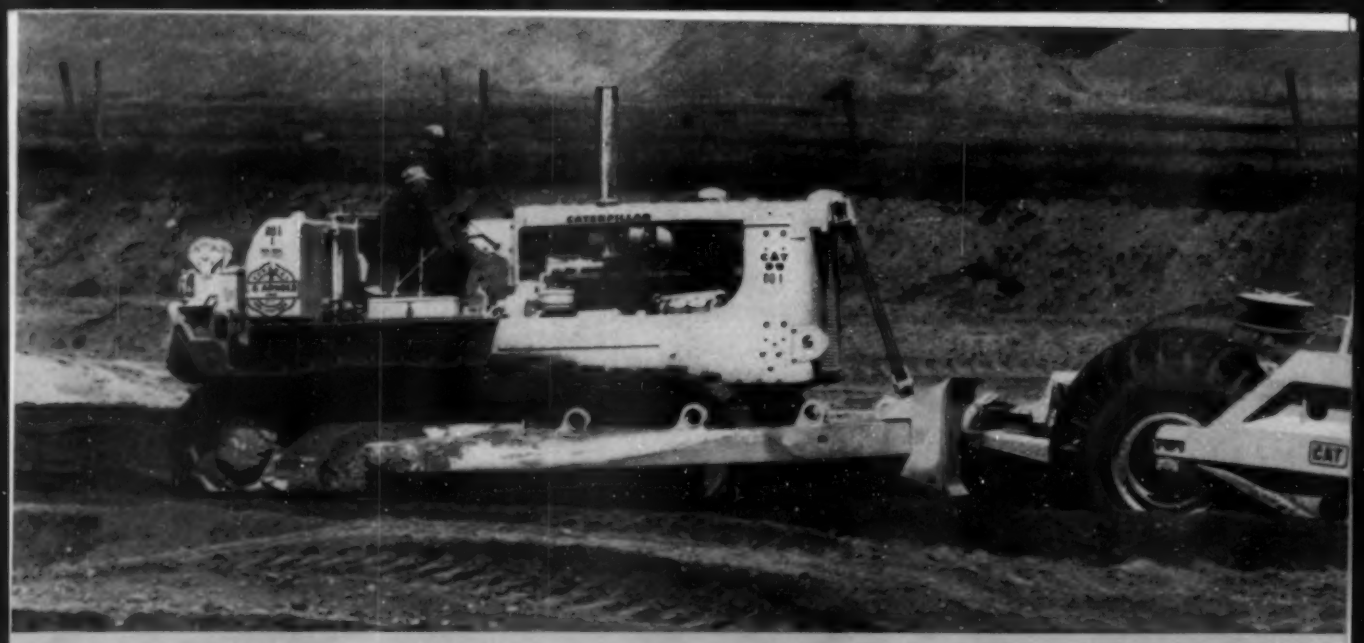
EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

A new Euclid
that sets higher standards of
performance in all soils—wet or
dry—hard clay or loose sand!



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



DOES THE KING OF THE CRAWLERS PAY ITS WAY?

Let's talk push-loading. We'll use some figures—that's the only way to tell a dollars-and-cents story.

On a job in Munsing, Michigan, not long ago, a Caterpillar D9 Tractor and a competitive machine were both push-loading in moist sand with some gravel in it. The other machine loaded 18.3 cu. yd. in .91 min. That's 20.1 cu. yd. a minute. The D9 pushed 18.5 cu. yd. into the scraper in only .58 min. That's 31.9 cu. yd. a minute. In other words, the D9 loaded over 50% faster than the other machine, and developed a larger load while doing it.

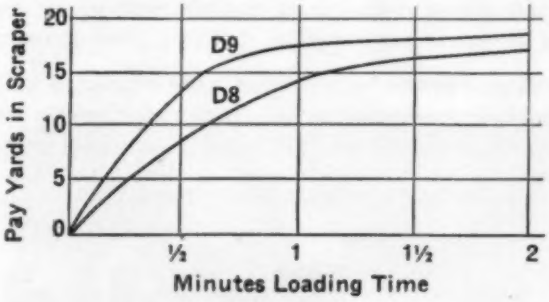
In Belmont, N. C., a D9 and a different competitor were push-loading in sandy clay. The other machine handled 15.3 cu. yd. in .67 min. Or 652 cu. yd. an hour. The D9 handled 17.2 cu. yd. in .42 min. Or 860 cu. yd. an hour. This was a half million cubic yard job; the D9 could have completed it in 3½ weeks less time than the other machine.

On a job in Minot, N. D., on another in Atlanta, Ga., the story was much the same.

Compare a big yellow machine with another big yellow machine

Maybe the best way to spell out how the D9 can boost profits is to compare its performance not with another make but with this famous CAT* D8 Tractor.

Owners and operators know what the D8 will do. Pound for pound, it's the best-producing crawler in its class today. The D9 is bigger, has more power. Does this added size and power really make a difference? Look what happens when you have a D8 and D9 both pushing DW21-No. 21 units on the same job:



D9 push-loads DW21 with No. 470 Scraper on highway job in Wisconsin. Ten-mile job calls for handling 120,960 yards, mostly sandy gravel. D9 loads DW21 in gravel in 70 seconds here, with heaping loads up to 25 yards. Vice President F. L. Carr of L. G. Arnold, Inc., says, "The D9 pusher has more than lived up to our expectations." Grade Superintendent Phil Dudenhoefer adds, "Outproduces by far any other machines on the job."

Forget size, weight, horsepower. Forget toughness and agility. These only point to what counts most: out on the job, how does the D9 really stack up against competition in cost-per-yard?

Or compare these two big yellow machines this way. Say on a job your haul distance averages 1,875 feet and you're using three DW21-No. 21s with one pusher. If that pusher is a D8, you stand to average 344 yards an hour. If it's a D9, you'll get 412.

Now, say your spread is made up of the pusher and the three wheel units, plus a No. 12 Motor Grader and another crawler with 'dozer and roller. Figure your hourly owning and operating cost. Count in the depreciation, taxes, gas and fuel, lube oil, grease, repairs and labor, and operators' wages. If your pusher is a D8, a reasonable figure for the spread would be $73.52 an hour. If it's a D9, your costs could come to $77.32. But remember, you're getting 344 yards with the D8, and that comes to 21.4¢ an hour per yard of dirt. With the D9, you're getting 412 yards at $77.32 an hour—which figures out at 18.7¢ per yard of dirt.

The D9 would save you 2.7¢ per yard, *and* give you 68 more yards, each and every hour.

Naturally, these figures might not exactly match your own. But they are figures based on actual performance records and they tell an honest story.

Would the D9 make more money for you?

There are jobs that would not warrant a D9. With the rugged D8 available, there may be no need to call in the 29-ton, 320-flywheel-HP D9. But the above figures certainly prove this much: on job after job, the D9 *is* paying its way, no matter how close the records are kept. One of these jobs could be yours.

But don't just take our figures for it. Call your Caterpillar Dealer. Have him demonstrate the D9 on your job. Check it with *your* watch, in *your* dirt, against *your* books. *That'll* tell the tale.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE D9— PROFIT BUILDER

Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment

WIRE ROPE AT WORK

Now spanning the Delaware is the great Walt Whitman Bridge linking South Philadelphia with Gloucester City, N. J. The $90,000,000 structure, opening in 1957, is a project of the Delaware River Port Authority. It features a main suspension span of 2,000 ft—the eighth-longest yet built. At the midpoint of the span the roadway has a clearance of 150 ft above mean high water.

An interesting phase of the long, tough construction job was captured in the photograph above. As the picture was taken, one of the last of the truss-type floor beams was rising above the water, being lifted into position by strong, sinewy Bethlehem wire ropes. These steel cables handled the truss with ease, though it weighed in the neighborhood of twenty-two tons. The lift was a typical one for Bethlehem ropes, which can always be counted on to bring the load home.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:
CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING

BETHLEHEM WIRE ROPE
BETHLEHEM STEEL

Percy, Illinois . . .

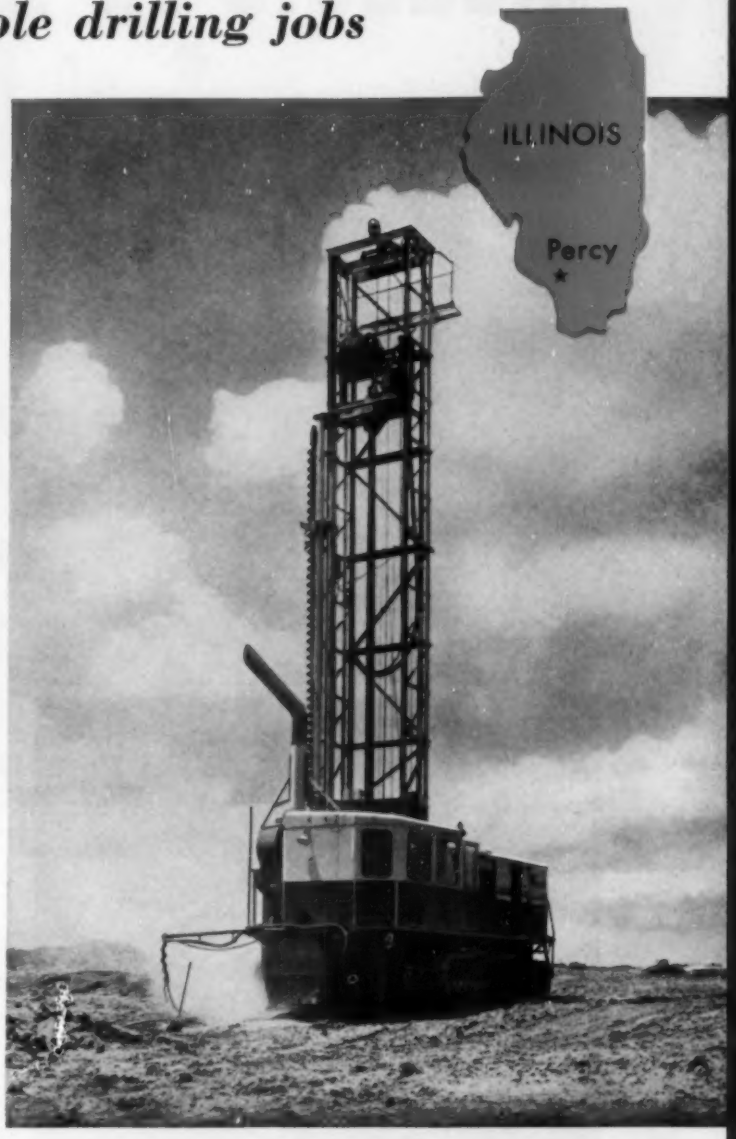
another example of how Bucyrus-Erie rotaries cut costs on blast hole drilling jobs

During a nine-month period this 50-R, drilling 10⅝-in. holes at the Southwestern Illinois Coal Corporation mine near Percy, averaged 526 feet per shift. Average hole depth was 44 feet in a formation consisting of 45% surface material, 27% lime rock, and 28% shale. Auger equipment was used for drilling the surface material and rotary bits for drilling the rock and shale.

This is just one of many case histories that prove the drilling superiority of Bucyrus-Erie rotaries. Behind the fine performance of the 50-R, which drills 9⅞- to 12¼-in. holes, and the 40-R, which drills 6¾- to 9-in. holes, are such outstanding features as these:

Ward Leonard electric control on rotation of the drill stem permits drilling at the most efficient speed for a given formation. *Compressed air is used to remove cuttings* and to cool the bit. Fine cuttings are picked up and handled by a precipitator; heavies pile up adjacent to the drill hole for use as stemming material.

Hydraulically-powered down pressure on the bit provides maximum controlled penetration. *Hole can be drilled continuously* for 32 ft. 9 in. (50-R) and 27 ft. 9 in. (40-R) before an additional pipe section has to be added. *A remote-controlled, power-driven drill pipe rack* adds or removes drill pipe without manual effort. Rack also stores pipe not in use.



These features can speed operations and cut costs at YOUR mine. For detailed, illustrated literature explaining how Bucyrus-Erie rotaries are achieving coal mine economies, write today to:

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BUCYRUS ERIE

South Milwaukee, Wisconsin

Before you buy any giant-sized
Measure TD-24 giant-sized

When you're 'dozing through rock and other materials, instant fingertip Hi-Lo shifting is a big cycle-speeder. And it cuts operator effort way down!

With full-time "live" power on both tracks, the TD-24 almost builds the road itself—hugging the mountain slope, giving added *operating ease, safety, and capacity!* That's another bonus from exclusive time-proven Planet-Power steering.

Try holding a 19-ton load on the blade with any other crawler this big—making a turn as this TD-24 is doing with both tracks pulling, while stockpiling coal with a special wing-type blade. The TD-24's operator can make "round-house," feathered, or pivot turns—with fingertip ease!

tractor advantages!

When you buy a big crawler look beyond sheer size and weight. You may be paying for enough extra "iron" to cause a startling jump in fuel and upkeep costs. So compare. Weigh bigness against provable working and earning capacity! Measure these giant-sized TD-24 advantages that have proven out over 8 years of on-the-job success!

Eliminates "dead-track drag!"

Does the giant you're considering steer with full-time "live" power and "live" traction on both tracks? TD-24 users by the thousands have proved that any crawler *this big* is obsolete without exclusive, time-proved Planet-Power steering advantages!

Planet-Power steering eliminates power-wasting, load-limiting "dead-track drag." Upgrade, downgrade, or on the level, you can smoothly turn a heavily-loaded TD-24—under positive control!

Does the big one you're looking at give cycle-speeding on-the-go shifting? The TD-24 does! And the exclusive two-speed planetary system teamed with a 4 speed synchromesh transmission —gives instant, stall-preventing and time-gaining Hi-Lo shifting, *without declutching.*

Does that big one you need have the genuine in-seat, seconds-fast, all-weather International gasoline conversion starting? Or the operating ease, power-transfer efficiency, and service-simplicity of the International Cerametallic-faced engine clutch? Or 8 practical speeds *forward and reverse?* Only the TD-24 has all these, plus dozens of other giant-sized advantages!

Prove to yourself the TD-24 beats all other giant-sized power—for *performance value*—for *big-scale ability to make you big money.* Ask your International Construction Equipment Distributor for a demonstration of a Gear-Drive or Torque-Converter TD-24!

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors ... Self-Propelled Scrapers and Bottom-Dumps ... Crawler and Rubber-Tired Loaders ... Off-Highway Trucks ... Diesel and Carbureted Engines ... Motor Trucks

Heap-loading the sideboarded International "75" Payscraper in less than a minute proves the economy and efficiency of the TD-24 as a "pusher."

CLYDE E. WEED

Portrait by Fabian Bachrach

"22,514 Anaconda Employees Are Buying U. S. Savings Bonds

"In October, 1953, only 34% (11,140) of the nearly 33,000 Anaconda organization employees in this country were buying U. S. Savings Bonds through the Payroll Savings Plan.

"Late in 1953, we conducted a simple person-to-person canvass which put a Payroll Savings Application Blank in the hands of every employee. There was no pressure, no special promotion – just the Application Blank. Our employees did the rest.

"Recently, our records showed that 22,514 of our men and women—69%—are now Payroll Savers. Every new employee is given a Payroll Savings Application Blank and an opportunity to join with his fellow workers in building personal security through systematic thrift.

"We believe The Payroll Savings Plan—with an enrollment of 8,000,000 employees of more than 40,000 companies—is a significant contribution to the Government's effort to check inflation and maintain a sound dollar."

CLYDE E. WEED, *President*
The Anaconda Company

Why not take a *personal* interest in *your* Payroll Savings Plan? Your State Director will be glad to show you how to install the Payroll Savings Plan or revitalize an existing plan. Phone, wire or write, today, to Savings Bond Division, U. S. Treasury Department, Washington, D. C.

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EXCAVATING ENGINEER

Put BIG 27-yd. "B" on yardage jobs

If you want a dirtmoving machine that will haul bigger payloads, at higher average speeds, for lowest-net-cost-per-yard . . . check these Big B Tournapull advantages:

Greater capacity

19.1 cubic yards, struck, or 27 cubic yards, heaped, make the new "B" an outstanding machine for those big jobs. Designed especially for 27-yard capacity, it has speed, power, and stamina to out-produce any other rig on the market.

10-gear speed selection

Choice of 10 gears, plus clutch brake for fast shifting, means hauling at higher speeds . . . more trips per hour. Double-clutching and gear clash are eliminated. Low-gear speed range matches pushers, aids in loading. Wide range fits tough going, gives better grade-climbing ability.

Faster, easier loading

Stout, double-steel bottom, reinforced by welded-steel filler channels, takes strain and shock off fast loading with pushing tractors. Wide, shallow bowl allows easy entrance of dirt. New push-block provides direct line thrust to cutting edge. New scraper hoist-control gives fast pumping action in loose materials. New blade angle, improved weight distribution, and easy loading characteristics of the big B Tournapull speed up loading.

Power where it's needed

Tournapull's electrical control system puts the power right where it's needed, with minimum friction loss. Dependable motors are unaffected by weather conditions. Operation is by dashboard push-buttons . . . action is instantaneous. Maintenance is simple.

Shorter turns

Despite its size, "B" maneuvers in closer quarters than any other big, self-propelled scraper. This machine can turn around in a space only 35′ wide. Machine is power steered . . . easy to handle anywhere . . . maneuvers safely in rough going, at high speed.

Less weather delay

Start work earlier . . . stop less often due to rain . . . add work-time at end of season with "B's" high tractive ability. Power-transfer differential transfers pull to wheel on firmest footing . . . "walks" "B" out of soft spots. Big, low-pressure tires give good traction in soft going. Rain and dust do not bother electrical system.

Faster, easier servicing

Accessibility is tops in the "B". New design makes every component easy to get at and service in the field. Fewer fittings and check points reduce lubrication time. Compare "B" with other big scraper units . . . note simplicity, accessibility, check service manuals and count and compare individual operating needs per month of operation.

Profit-making interchangeability

A 35-ton Rear Dump is available for use with the same "B" prime-mover. You can switch this 35-ton hauling unit anytime job conditions call for shovel or dragline loading. This way you get insurance of continuous earnings . . . double value from your investment.

Tournapull—Trademark Reg. U.S. Pat. Off. BP-955-G-b

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WHERE QUALITY IS A HABIT

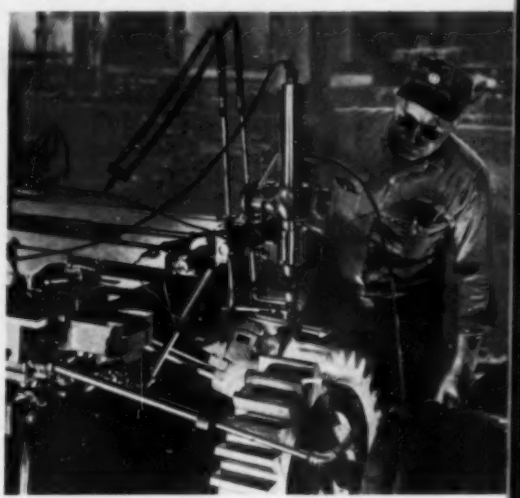
BONUS QUALITY

BONUS QUALITY is built into <u>every</u> Bucyrus-Erie excavator — Bonus Quality in design, in materials and in manufacturing. No matter what a job calls for — shovel, dragshovel, dragline, clamshell, or crane — Bucyrus-Erie Bonus Quality brings you extra dividends in low maintenance, outstanding performance, and extra years of service. See your Bucyrus-Erie distributor soon for complete details on machines from ⅜ to 4 cubic yards. 216E56C

QUALITY STEEL is assured at Bucyrus-Erie. A test bar is poured from each batch of steel and thoroughly analyzed to make sure it meets exact specifications.

BUCYRUS ERIE

THE NEW 30-B — This 1-yd. excavator, latest addition to the Bucyrus-Erie line, is shown here digging a trench for sewer and water lines in a new subdivision near Milwaukee.



LONG LIFE for wearing parts, like gears and pinions, is assured through manufacturing care like this — automatic flame hardening that controls hardness to just the right degree.

NORTH CAROLINA — Work on a new highway right-of-way near Kingston goes along smoothly with this ½-yd. 15-B dragline on the job. "I wouldn't trade it for anything", says the enthusiastic owner.

WISCONSIN — "Smooth and fast", reports the operator of this ¾-yd. 22-B shovel as he loads crushed rock for a county building project near Lancaster.

means BONUS PERFORMANCE on the job!

OHIO—"It sure stands the gaff", reports the owner of the 2-yd. 51-B shown here digging clay and quicksand on a new highway near Conesville.

WASHINGTON—Dependability is particularly desirable in places like wild Olympic National Park where this 1½-yd. 38-B is building a new access road.

BUCYRUS-ERIE COMPANY

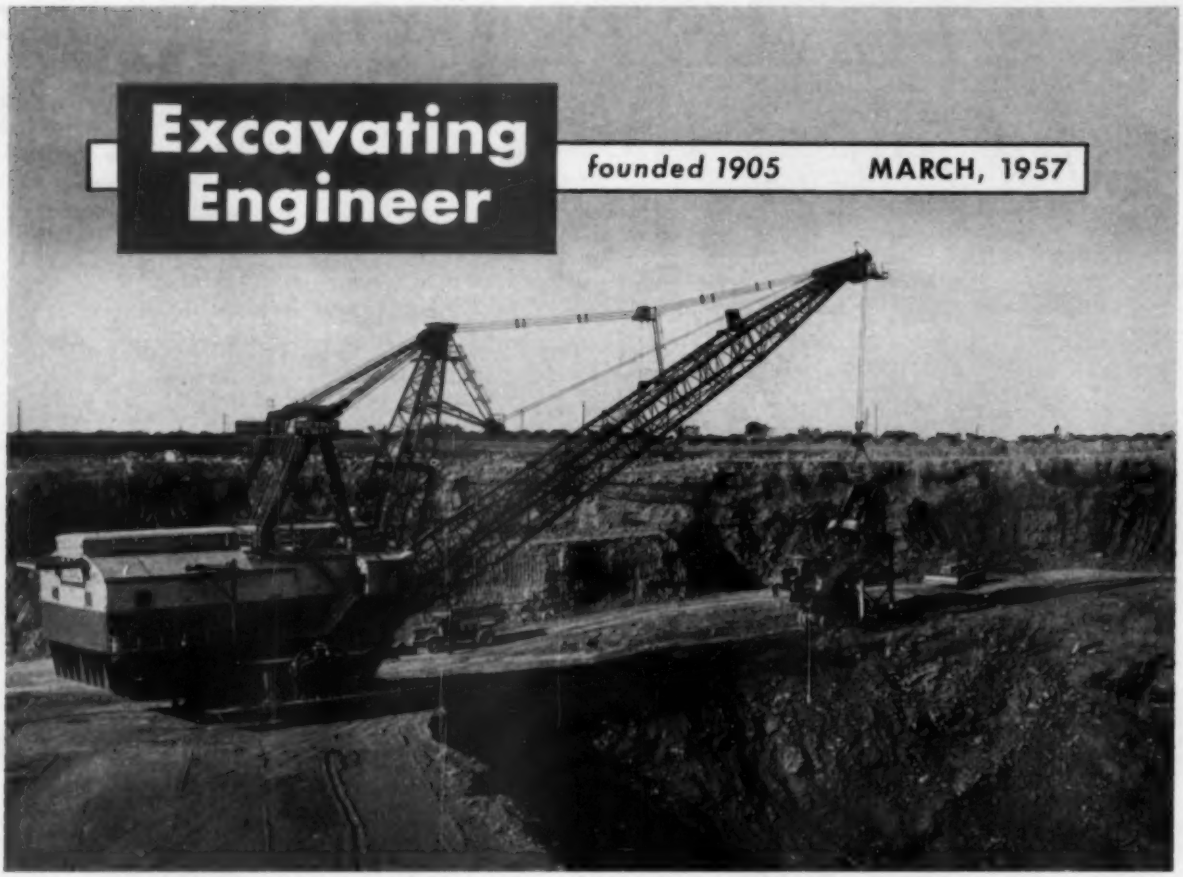
South Milwaukee, Wisconsin

TEXAS—This 2½-yd. capacity 54-B swings a 3-yd. dragline bucket to load out pit run gravel for the supply of a commercial gravel plant.

PENNSYLVANIA—A 3-yd. 71-B spearheads construction on an extension of the Pennsylvania Turnpike near Bear Creek. Digging in almost solid rock, owner reports, "The 71-B is doing an outstanding job".

CALIFORNIA—When you're reaching high on a structural steel erection job like this new bridge near Pasadena, you need the smooth, accurate control that a Bucyrus-Erie 88-B can bring you.

Excavating Engineer
founded 1905 MARCH, 1957



An 1150-B dragline with a 22-yd. bucket is used at Acorn Bank during the initial excavation to form the long box cut.

English Develop Opencast Mining

by T. W. Broughton
of Lincoln, England

DURING the last five years, opencast (strip) coal mining has been developed considerably in the United Kingdom under the supervision of the National Coal Board. Now the larger opencast sites in England, South Wales and Scotland can bear good comparison with the best in the United States; indeed, in many cases, almost exactly the same type of machinery is being used.

It is not intended in this brief resumé to deal with all the important coal sites in the United Kingdom, but only to give a cross section description to show that opencast mining is now a well-or-

Coal stripping has become a well-organized, mechanized industry during last five years.

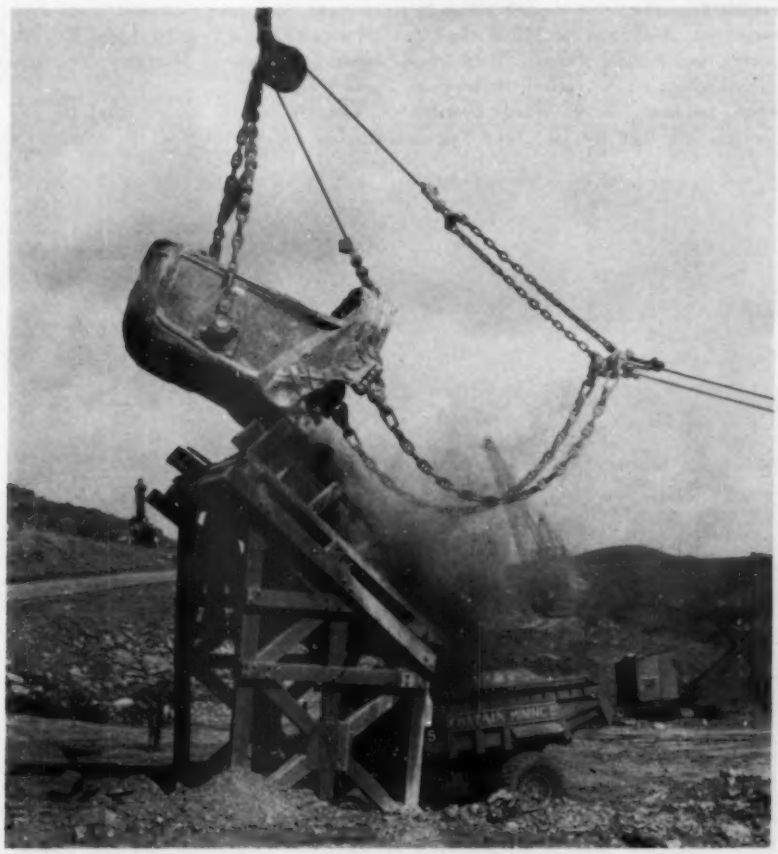
Two of Costain's coal loaders at Acorn Bank include a 5-yd. electric shovel (120-RB) and a ¾-yd. machine (22-RB). Acorn Bank is one of Britain's largest coal sites.

ganized industry with a very high degree of efficient mechanization.

The six sites comprising the Tirpentwys group in South Wales are being worked with two Bucyrus-Erie 1150-B walking draglines which strip the sandstone overburden. Depth of the overburden averages 80 feet, with a maximum of 155 feet. The two large draglines have slightly different boom and bucket combinations. One has a 215-ft. boom with a 20-yd. bucket; the other has a 200-ft. boom and a 22-yd. bucket. Output from each machine is about 800 cubic yards per hour, but varies according to depth of overburden and angle of swing.

The opencut is developed on the side of a hill. Considerable blasting of the sandstone rock is required. The 10⅞-in. blast holes are drilled with two Bucyrus-Erie 50-R rotary drills. These machines have variable voltage (Ward Leonard) electric control of the bit rotating speed. The bits are of the air-jet tri-cone roller type screwed to the collar of the drill pipe. The down pressure is hydraulically powered, and the rock cuttings are removed by air pressure. Electrically-driven hydraulic pumps and dual air compressors are incorporated in the machines which are mounted on caterpillar tracks equipped with three hydraulic levelling jacks. Including all stoppages for moving up, bit and pipe changing and maintenance, the drilling progress averages 75 feet per hour.

An estimated 9 million tons of coal will be obtained from Radar, which is the largest site in England and Wales. Here, a 6-yd. shovel loads the shale overburden.



A specially-designed skid-mounted hopper enables the 1150-B to load directly to a large Euclid dump. Acorn Bank is expected to produce about 5 million tons of coal.

Two seams of bituminous coal are mined. The upper seam is four feet deep and the lower is 2½ feet with a 3-ft. parting. The planned rate of coal production by the contractors, Wilson Lovatt and Sons Ltd., is 7,500 tons per week. It is estimated that duration of the job will be 10 years. Estimated resources are nearly 4 million tons.

Small Loading Shovels

The excavation of coal from the exposed seams is carried out by shovels varying in capacity from ⅝ to 1¾ yards. The coal is loaded into dump trucks for removal to a loading station, where it is screened and crushed before being transported by gravity chute down the mountain for loading into railway wagons for transport to power stations.

In addition to the two large draglines, a 5-yd. Ruston-Bucyrus 120-RB shovel assists in excavating the rocky overburden, and a 7-yd. dragline is engaged in rehandling.

Although this 650-acre site on a mountain plateau was comprised of rough agricultural land and pasture, complete restoration will be made. The 18 inches of topsoil and subsoil will be replaced.

Another interesting coal site operation in South Wales is that at Maesgwyn Gap currently being worked by George

Here's a closeup of a 6-yd. 150-B loading a 34-ton Euclid at Maesgwyn. Open cast mining began at Maesgwyn in 1949. Since then, it has yielded a million tons of coal.

Wimpey and Co. The operation involves the removal of a mountain top in order to uncover two coal seams lying approximately horizontal at a distance about 300 feet below the summit. The upper seam of anthracite coal is 12 feet thick.

The upper 60 feet of hard shale rock overburden is excavated in benches by two 6-yd. Bucyrus-Erie 150-B electric quarry and mining shovels. These machines, which are convertible to dragline when required, have Ward Leonard control. The 150-B's load into 34-ton Euclid dumps. The 60 feet of cover immediately overlying the coal is removed by a 12-yd. Marion 7400 walking dragline side casting into the worked-out section. After the coal has been loaded, the dragline moves onto the surface of the 30-ft. parting to remove the cover on the lower seam of coal, which is 3-ft. thick. Maximum depth of overburden is 300 feet. In places where previous working has been carried out, the depth is 150 feet. Until it was reopened in 1949, no mining had been done at Maesgwyn for nearly a half century.

Coal reserve at Maesgwyn Gap is estimated at 1,018,000 tons and will involve the removal of 27 million tons of overburden. The planned output of coal is reported to be 3,000 tons per week. A million tons of coal have been mined since 1949.

Two Cat-mounted Ingersoll-Rand Quarrymasters drill 5-in. blast holes in the overburden.

A 2½-yd. shovel loads the coal into 34 and 22-ton dump trucks for transport to the existing grading and washing plant serving deep mines several miles away at Rhos and Aberpwergwn. Anthracite coal is a much favored English export, and some of Maesgwyn's output goes abroad.

Considering the rather intricate nature of the working of the Maesgwyn

Shale overburden at Ackworth is stripped by this dragline with a 100-ft. boom and 6-yd. bucket. A 54-RB dragline is in rear.

Two large draglines dig overburden, while a shovel loads trucks with coal at Maesgwyn Gap, being worked by Wimpey & Co.

site because of the complication introduced by the earlier working, it is remarkable that only about 160 men are employed, including workshop and maintenance crews.

In the area of Bedlington, Northumberland, almost within sight of the sea, the Radar site currently is being worked by the widely known Scottish contractors, James Miller and Partners, Edinburgh. Radar probably is the largest site in England and Wales.

'Walkers' Strip Overburden

The plan for Radar is to have two Marion walking draglines strip the main part of the overburden. When this was written, the two Marions were not in active operation yet, and the cuts in the shale overburden were being made by 150-B electric heavy-duty mining shovels leased to the contractors by the National Coal Board. The 150-B's loaded 34-ton Euclid dump trucks. The coal is loaded by 22-RB ¾-yd. Ruston-Bucyrus shovels at the rate of 65 tons per hour. The estimated amount of coal to be obtained from this operation is 9 million tons.

About 10 miles away from Bedlington, Costain Mining Ltd. is engaged on the Acorn Bank site where an estimated 5 million tons of coal will be excavated during the next seven years. The excavations involve a deep "box" cut to uncover the coal seams. The stripping is being done by two 1150-B walking draglines which weigh 1,120 tons each in working order. Assisting in the rock excavation are three 5-yd. Ruston-Bucyrus 120-RB heavy-duty mining shovels. The 120-RB's and the walking draglines are leased to the contractor by the National Coal Board. Peak output from this site will be around 16,000 tons per week. After completion of mining, the site will be fully restored in line with the work now being carried out on the adjacent Ewart Hill Deep site, previously operated by Sir Lindsay Parkinson and Co. Ltd., but now worked out.

Acorn Bank has three seams—the High Main, Top Grey and Bottom Grey. The High Main averages 3 feet 3 inches in thickness. The Top Grey has two leaves averaging 2 feet 7 inches in thickness with a 2½-in. band. The Bottom Grey has four leaves. Spacing between the High Main and Top Grey varies between 40 feet to six inches. The spacing between the Top Grey and Bottom Grey varies from 15 feet to 120 feet. Maximum depth of the Bottom Grey is 230 feet.

The first box cut will be approximately 3,200 feet long, 100 feet wide on the bottom with a maximum depth of 230 feet. About 8 million yards of material will be removed from the cut, and much of it will be used to fill a worked-out site.

In forming the box cut, the draglines and the three shovels load to 60 Euclid 22 and 15-ton end dumps. A skid-mounted hopper enables the 1150-B to load directly to the 22-ton Euclids.

Coal dug by the 1½-yd. electric shovels will be loaded to rail-mounted 10-ton derrick skips positioned at the top of the cut. The coal will be transported to screens by 40-ton haulers.

Small, Interesting Site

Among the interesting, though by comparison, smaller sites than those previously described is that currently being worked by Shepherd Hill and Co. at Ackworth, near Pontefract. This 150-acre site is expected to yield a total of 500,000 tons of good quality coal with a high B.T.U. content. Current weekly production of coal from this site is about 8,000 tons. Ackworth is a National Coal Board site, but all of the machinery is owned by the contractor. At present, most of the stripping is done by two 110-RB machines,

Continued on page 60

On west bank of the Mississippi, draglines excavate for low-sill structure which will regulate flows through outflow channel.

Engineers Build to Tame 'Ole Miss'

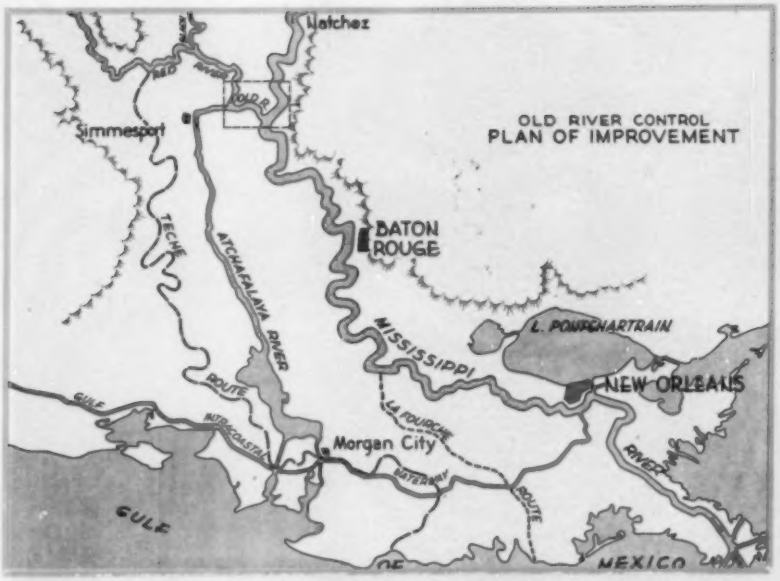
by Major General John R. Hardin
United States Army Corps of Engineers;
President, Mississippi River Commission

River project in Louisiana will prevent Mississippi River from abandoning present course in favor of shorter route to Gulf. Concrete control structures, earth dam and levees will be built.

NEARLY two million cubic yards of earth have been excavated for the first of two reinforced concrete control structures being built by the Corps of Engineers as part of a plan to prevent the Mississippi River from changing its course. During September, 1956, excavation reached a grade where pile driving was begun. Good weather combined with careful planning and good management by the contractor, F & C Engineering Co., Houston, Tex., resulted in the work moving along well ahead of schedule.

The plan of river improvement is being constructed on the west bank of the Mississippi about 35 miles south of Natchez, Miss. It is the first such plan built in the United States to prevent the diversion of a major river. The low-sill structure now being built is the first element to be constructed under the plan. The plan also calls for an overbank structure, a navigation lock, enlarged and strengthened levees, and an earth-fill dam, with approach, inlet and outlet channels for the low-sill structure and the lock. The plan is designed to prevent the Mississippi River from leaving its present course past Baton Rouge and New Orleans, La., for a course which would take it through Old River and the Atchafalaya River to empty into the Gulf of Mexico at Morgan City, La. The project will require about eight to ten years to complete and, exclusive of the navigation lock, will cost about $47 million.

Old River is a seven-mile long stream connecting the Mississippi River on the east with the junction of the Red and Atchafalaya rivers on the west. The streams combine to form roughly the letter "H," Old River being the cross bar. For many years, Old River discharged into the Mississippi when stages in Red River were higher than those in the Mississippi; it discharged into the Atchafalaya when Mississippi stages exceeded those in the Red River. In recent years, flow has been increas-



Several major diversions of the Mississippi have occurred. It once flowed through the path now occupied by Bayou Teche; later, it followed the route of Bayou Lafourche.

ingly greater from the Mississippi into the Atchafalaya, directing immediate attention to a dangerous situation which the Mississippi River Commission has had under careful observation for many years.

During comparatively recent geologic time, several major diversions of the Mississippi have occurred. It once flowed through the path now occupied by Bayou Teche; later, it abandoned this course for the one now followed by Bayou Lafourche. Some 250 years before DeSoto first saw the Mississippi, it made its last major course change, abandoning the Lafourche course for the one it now occupies. In each case, it left a long-occupied channel in favor of the course of a smaller distributary offering a shorter and steeper path to the Gulf, a precise description of the present Atchafalaya route.

Economic Disaster

The consequences of such a diversion would be disastrous. New Orleans would be deprived of fresh water for industrial, commercial, and domestic purposes; the flood control plan for the lower Mississippi basin would have to be drastically revised; river navigation would be seriously harmed; both navigation and flood control structures would have to be rebuilt; and bridges, pipelines and even towns and cities might either have to be rebuilt or abandoned.

The control plan will prevent this occurrence, and it will maintain the status quo of the river systems in this area, providing a control of flow at all stages.

Studies made by the Mississippi River Commission concluded, in a report issued in 1951, that diversion through the Atchafalaya was probable and estimated that such a diversion could occur in about 1975. Congressional authorization of a plan to prevent this diversion was given in the Flood Control Act of September 3, 1954, and money was appropriated to begin construction the following year. Bids for the construction of the low-sill structure were opened in August, 1955, and a contract for $9,892,628 was awarded to F & C Engineering Co., Houston, Tex.

The low-sill structure is designed to pass normal and low flows from the Mississippi River through an outflow channel into Red River and on into the Atchafalaya. During time of flood, it will assist the overbank structure in passing flood flows into the head of the Atchafalaya basin, as called for in the lower Mississippi flood control plan. Operating together, the two structures are designed to discharge about 700,000 cubic feet per second.

Although it will be the smallest of the structures to be built, it will require vast amounts of materials: 33 miles of steel pipe piles; 250,000 cubic yards of sand, gravel, riprap, and concrete; more than 100,000 barrels of cement; and 90 railroad gondola cars of reinforcing and structural steel.

The low-sill structure will be a controlled spillway of reinforced concrete with vertical-lift steel gates. It will

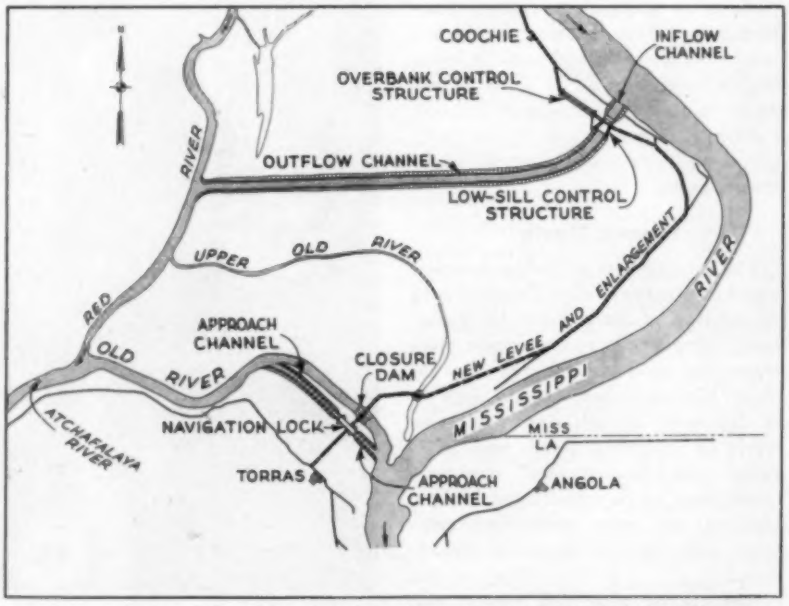
Principals involved in construction of the low-sill control structure are (left) Col. W. H. Lewis, district engineer, and J. A. Allison, vice president of F & C Engineering Co.

Aerial view shows threatening diversion of Mississippi (upper right) through Old River (center) into Atchafalaya River (bottom).

have a gross length of 566 feet between faces of the abutment training walls and will have 11 gate bays, each with a 44-ft. clear opening between piers. The four end bays on each side of the structure will have a weir crest elevation of 10.0 feet mean sea level; the three central bays will have a weir crest elevation of —5.0 feet mean sea level. The elevation of the ground surface is approximately 50.0 feet mean sea level.

The low-sill structure is being built in an abandoned Mississippi River channel which has been filled with sediment. Soils at the structure site consist generally of a thin layer of natural levee silts underlain by back-swamp clays 10 to 20 feet thick. Below this are alternating strata of silts, silty sands, and sandy silts, with some interspersed clay strata. A stratum of clean sands, with a thickness of 40 to 60 feet, lies beneath the silty soils. Below the sand are stiff tertiary clays.

Excavation for the low-sill structure is being performed under sub-contract by Joe E. Fruend, Monroe, La. About 2,913,000 cubic yards of clays, silts, and silty sands are to be excavated. Nearly two million cubic yards have already been moved. Pile driving was begun in mid-September and pouring of concrete was scheduled for December 1956. While the structure is being built, excavation will continue outside the im-



Drawing shows location of low-sill and overbank structures on Mississippi River outflow channel, and position of navigation lock and earth closure dam on the Old River.

mediate construction area. Equipment will be held on the job for backfilling after the structure is built.

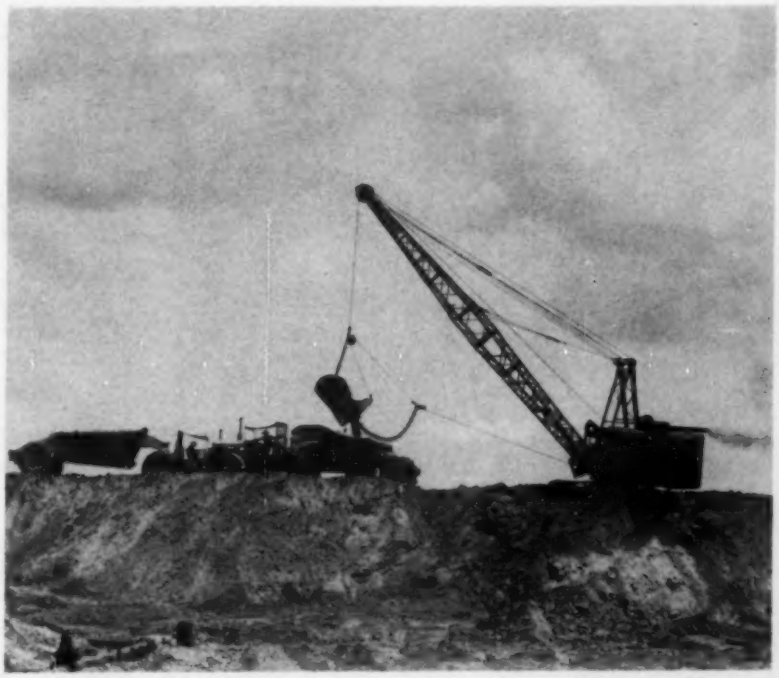
The excavation, 1,500 feet long and from 600 to 1,000 feet wide, will extend to elevation —5.0 feet in the approach channel and elevation—20.0 feet mean sea level in the central portion of the stilling basin. Excavation side slopes are generally 1 on 4.

Equipment Setup

Twenty-two Euclid bottom-dump 13-yd. units are being used to haul material excavated by four draglines equipped with 3-yd. buckets. Additional equipment includes eight Allis-Chalmers and two International TD-24 tractors. Four Allis-Chalmers Motor Patrols are used to maintain pit access roads. The contractor has set up a maintenance shop at the construction site.

On a normal working day, two 10-hour shifts are worked. The day shift uses three draglines and 16 Euclids. The night shift uses one dragline, five Euclids, three tractors, and one Motor Patrol.

Good planning, good weather, and orderly use of equipment have pushed excavation ahead of schedule. Excavated material is being placed in the tie-in embankments joining the structures together and tying the south end of the low-sill structure and the north end of the overbank structure to the main line Mississippi River levee. The longest haul from pit to enlargement is one and one-half miles. Good compaction is being obtained by movement of the hauling units. About 25,000 cubic yards of material from the low-sill excavation will also be used for the compacted fill to be built between the structures. Additional excavated material will be used in enlarging the mainline levees.



A dragline with 2½-yd. bucket loads 13-yd. Euclids in the low-sill excavation area. Four draglines and 22 bottom-dumps are used to remove 2,913,000 cubic yards.

A major problem facing construction forces during excavation and building of the low-sill structure is keeping the area dry. Not only must the pit be kept dry for ease of excavation, but the hydrostatic head must be controlled.

A dewatering system provides for shallow wellpoints in the excavation slopes to prevent seepage from emerg-

Deep relief wells here are part of a permanent drainage system to control hydrostatic head under the low-sill structure.

A strip of land two miles long and 2,900 feet wide was cleared for the outflow channel. Dredging operations will remove 13 million yards of silt and clay.

ing on the slopes of the excavation and interfering with excavation operations. A system of large-diameter deep wells controls uplift pressures beneath the bottom of the excavation.

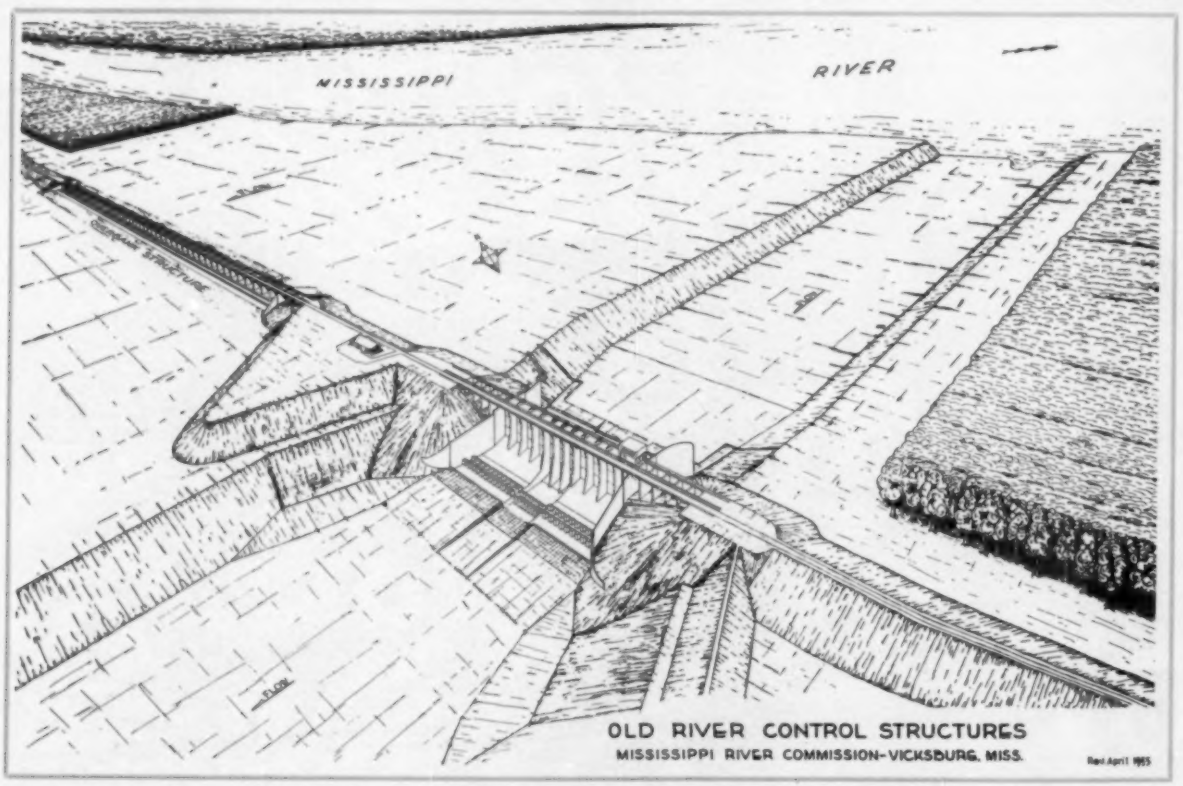
Piezometer observations made in early 1954 showed that hydrostatic pressures in the deep sands near the structure closely reflect Mississippi River stages. The maximum probable river stage at the construction site is 60 feet mean sea level. For this stage, at the lowest point of excavation the hydrostatic head could reach 80 feet. Without a dewatering system, this large hydrostatic head would probably blow out the excavation bottom.

Twenty-seven deep relief wells have been installed in the excavation area. Seven of these, spaced about 90 feet apart, are in the stilling basin area and are a part of the permanent drainage system beneath the structure. The riser pipes from these seven wells project vertically through the upstream row of stilling basin baffle blocks to permit pumping during construction. The deep wells consist of 8-in. inside-diameter slotted wooden well screens, with a nominal length of 32 feet, and 8-in. wooden riser pipes. The screen sections extend from about elevation —80 to elevation —112, penetrating the major part of the deep sands.

The deep wells are being pumped with both vacuum type and deep well turbine pumps. Very little water is being pumped out of the upper shallow wellpoints; a bankfull river stage will require pumping about 12,000 gpm from the deep wells to achieve a dry excavation.

A perimeter dike surrounding the ex-

Continued on page 58



Here's how concrete low-sill and overbank control structures will look. Entire Old River control project will take 10 years.

Homemade Explosives Can Be Dangerous

Mixing blasting agents directly at the job site to avoid the expense of maintaining separate facilities can produce hazards that endanger life and property.

"DO-IT-YOURSELF" explosives compounded from such easily obtainable materials as carbon black and fertilizer-grade ammonium nitrate are finding increasing use in field blasting operations.

However, in a newly released report titled *Field Compounded Blasting Agents*, an industrial safety research team of the Casualty and Surety Companies Assn. warns that the ease with which such agents can be compounded tends to obscure their hazardous qualities and occasionally leads to carelessness in their preparation and use.

Robert Hagopian, industrial safety director of the association, said that research was begun on the subject after insurance company field men began reporting an increasing use of the techniques by persons not sufficiently experienced in blasting operations.

"Most field-compounded blasting agents," the report says, "consist of a mechanical blend of fertilizer-grade ammonium nitrate and a combustible material, which is usually a fine carbon black, with or without oil added. These materials, in proper proportions, are placed in a mixer and mechanically blended. While most of these blasting agents are not cap-sensitive, they should be regarded as explosives.

Improper Mixing Facilities

"The lower cost of these compounds has resulted in their widespread use in place of such conventional explosives as dynamite or black powder. To avoid the expense of providing separate compounding facilities, some small quantity users have been known to mix these blasting agents directly at the job site. This practice could result in hazardous conditions that might endanger life and property."

To counteract these hazards, the association's research team lists steps to be taken in the transportation, storage, preparation and use of field compounded blasting agents.

Storage and mixing of the components, in particular, should meet peculiarly exacting requirements, according to the report. Among other things, storage magazines should be unheated and unlighted, isolated in accordance with prescribed standards, and kept exceptionally clean—as should mixing areas. For, as the report states, "ammonium nitrate is an oxidizing agent and enables fire to burn independent of any air supply. It readily supports combustion, and may explode at temperatures of over 300° F., particularly if contaminated by organic matter. This can occur when the ammonium nitrate is subject to fire in an enclosed area where temperatures can rise rapidly."

Although the greatest use of these blasting agents so far has been by qualified personnel involved in strip mining and in other large-scale surface blasting operations, the "do-it-yourself" appeal of the explosives is leading to their increased use by inexperienced personnel. The association's research team concludes its report with the observation that "field compounded blasting agents should be handled only by experienced workers and with the same precautions specified for conventional explosives."

Hagopian said that the report is one of a continuing series of studies undertaken by the association's "special hazards engineering research" subcommittee. Each of the studies, he said, deals with a particular source of industrial accidents and treats with causes of the mishaps and with methods of preventing them.

How to Get

The special hazards reports are restricted to the association's member companies, but mine operators, contractors and others interested in information about a particularly hazardous process or operation can receive information and assistance by contacting their local capital stock casualty insurance agent.

Special hazards report issued by association of insurance companies lists some undesirable practices occasionally used by powdermen in storing and handling "do-it-yourself" explosives.

A ¾-yd. shovel loads sub-base material for highways into a 5-yd. GMC dump truck. "Drive through" loading procedure is used.

They're Building an Earthmoving Business

by Ray Day

"WE'LL get Spencer." Those three words are being heard more frequently these days in the Pacific Northwest around the city of Vancouver, Wash. And they don't mean that Spencer's life is in danger—far from it. Project managers and superintendents of major construction companies are saying those words. So are state highway officials and county roadbuilding engineers. Even private owners, with many kinds of dirtmoving jobs, are taking up the cry.

"We'll get Spencer," said that way, are words that prove contracting businesses still can be built by specializing in dirt-moving. Five years ago, the contracting firm of S. D. Spencer & Son had one small ½-yd. shovel and a few dump trucks. Today it has three shovels, 56 trucks, other necessary equipment and a business growing so fast that sometimes it has to go outside its own organization to rent more trucks.

Business Passes $600,000 Mark

With its own fleet of equipment, the rapidly growing company did $600,000 worth of contract business in 1956, and is shooting for an even higher volume this year.

This objective probably will be reached. Spencer showed it has what it takes to get work done when first-stage river diversion work at the Dalles Dam on the Columbia River called for fill for steel sheetpile cofferdam cells. The job was a hundred miles from home base. Timing was tricky, and the nationally-known construction firm which had the cofferdam job was in a hurry. Despite the fact that this company has a multimillion-dollar pool of its own equipment, the word went out to "get Spencer."

Could his organization move 300,000 cubic yards of sand and gravel fill in a hell of a hurry, filling and stabilizing the cellular-type steel sheetpile cofferdam?

Spencer could . . . and did. A Bucyrus-Erie 22-B shovel was rushed in with enough trucks to handle peak loading capacities of 250 tons per hour. Working 10-hour shifts, at least six and frequently seven days a week, the small spread put grins on executive faces around the Dalles Dam by averaging 125 cubic yards an hour for the 300,000-yd. assignment. When pile drivers had finished slamming in the cell piling, Spencer's trucks were practically running over the pile butts.

Good management and equipment selection parlay the small business of S. D. Spencer & Son rapidly into a thriving contractor status. Firm's specialty is moving dirt in a hurry.

How do businesses like Spencer's get started?

"Somebody has an idea he can make a stack of chips in the construction business," explained George Spencer, who is the "son" of S. D. Spencer & Son. "If a man's experience has been in excavation and grading, naturally he specializes in that type of construction. Sometimes he makes it; sometimes not.

"It depends partly on management, partly on equipment, partly on the breaks of the game, with luck playing a role also. So far we've been lucky."

But if George Spencer and his father are lucky, they are lucky people with a purpose. Not a day goes by without a personal visit by one of the Spencers to the various jobs. Flaws in methods, which could be sharpened up, are seen by eagle eyes. A shovel operator handling material twice when once would do is due for criticism. A truck backing into a shovel when a drive-through circle could be used instead is flirting with a premature paycheck.

Crammed with experience, George Spencer has a deferential approach to men and customers, but he knows when to be sharp with both. "Those holes in the haul road need fixing," he snapped at a motor grader operator not long ago. "Let's get at it."

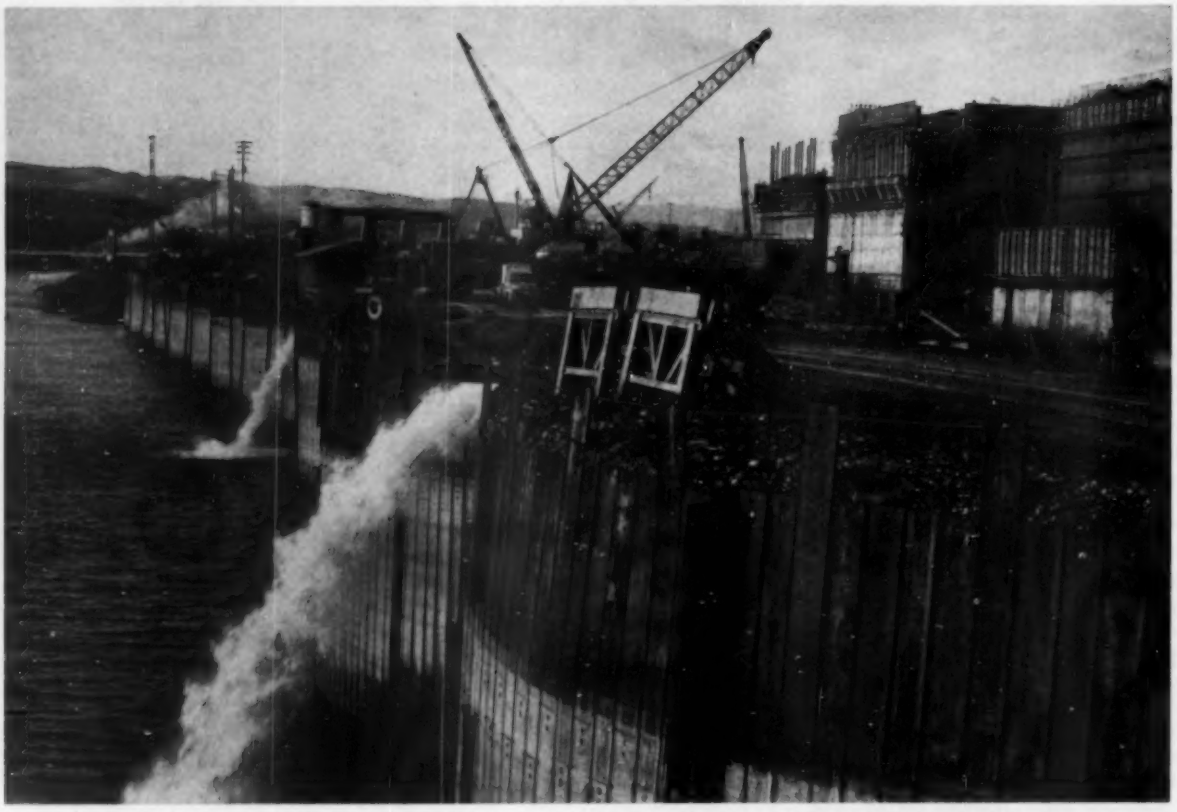
The business was begun originally by S. D. Spencer in 1932, when the depression made any business tough to nurse. It started as a small trucking outfit, and squeezed along through the years when money was tight. It almost foundered during the war, meandering along without too much purpose. After 1945, however, the Spencer ship straightened on course bound for a certain type of earthmoving business. Highways, dams and even industrial jobs were beginning to run heavier in items where dirt, rock and gravel had to be dug and hauled. The Spencers sought out deliberately to carve themselves a chunk of this pie.

It was the thing in which they had the most experience, and it was only natural.

By 1949, the trucking business had

A Cat motor grader knocks down base material which Spencer's trucks have brought in near Camas, Wash. Highway grading is a large part of the firm's business.

Working behind the grader, a Bros pneumatic roller pulled by a rubber-mounted Ferguson Major D tractor compacts the base.



A rush job handled by Spencer's trucks at Dalles dam was the filling of cofferdam cells with 300,000 yards of sand and gravel.

increased to a point where good additional business could be had if the Spencers bought a rig to load their trucks. Based on the probable low cost of long-time maintenance, plus high operating efficiency, a Bucyrus-Erie 15-B was purchased from Clyde Equipment Co. of Portland, Ore. Since then, business has increased fast enough so that two new Bucyrus-Erie 22-B shovels also have been added. The 15-B has all attachments: crane, shovel, and drag-shovel. The two 22-B's have crane booms and shovel fronts. All machines are equipped with Bucyrus-Erie dippers or buckets. The 22-B's often use buckets up to 1⅛ cubic yards (these are lightweight rehandling buckets) in light material. In rock or other heavy material, the conventional ¾-yd. equipment is used.

Despite the company's long experience, selection of trucks has been a bigger problem than the selection of shovels. Oregon's traffic regulations allow gross loads of 40,000 pounds on six-wheelers.

Washington's weight restrictions cut that down to 36,000 pounds. Spencer has ten six-wheelers, which do have the advantage of 8 to 10-yd. capacity. But the legal payload for over-the-road hauling is limited to 9.9 tons.

Double-Purpose Fleet

A much more practical answer to the problem is the 5-yd. Chevrolet and GMC trucks which make up the remaining portion of a 56-unit fleet. These smaller trucks will handle permissible 7.6-ton payloads in both states, with less operating expense for fuel, maintenance, tires and investment. Also, the smaller trucks are easier to maneuver in tight spots. For that reason, the Spencers have standardized on the smaller trucks for most over-the-road hauling. Where large quantities of material have to be moved under off-the-road conditions, such as on a dam, on private logging road systems or other such areas, the big six-wheelers are the answer.

The Spencers have also standardized on nylon cord tires of Goodyear and Goodrich manufacture on the theory that if they are a good investment for outfits like Guy F. Atkinson Co., South San Francisco, Calif., they should be also for a small outfit.

Perennial problem in truck operation is engine lubrication and maintenance. It seems that each time the major oil companies improve engine fuel, that a host of new studies has to be run before valve trouble stops. Last summer, during a flurry of valve trouble, Spencer put manometers in the truck manifolds to check operating temperatures—they were a red-hot 1,400°—and then switched to the highest detergent oil which Standard Oil Co. of California makes. The answer seems to be a combination of the best-grade fuel of any major manufacturer, used in conjunction with the highest detergent compounded oil put out by that company. One seems to be balanced for the other.

"Some of those compounded oils look like dishwater, have no body, and make you think you're due for even more trouble than you've got," Spencer grinned. "But we haven't lost a bearing on the stuff, and our valve trouble is way down."

As business has grown, so has the need for other equipment allied with earthmoving. The Spencers now have a small Pettibone-Mulliken conveyor-type loader, a Trojan motor grader, two Cat D6's with dozers, a new Ferguson D

Continued on page 37

Modern Heavy-Duty Diesels

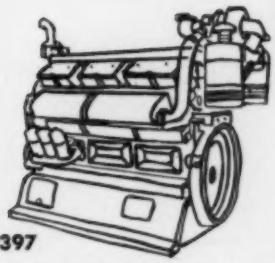
From a quarter century of diesel leadership, now comes the world's most advanced line of diesel engines

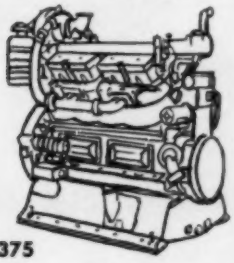
Designed and developed by Caterpillar research, these compact units pack more power in less space and deliver greater efficiency, greater economy and longer life in any application. And they're all ruggedly built for *hard work.*

To meet your requirements, Caterpillar's modern power line is available in industrial engines, torque converter power units, spark-ignition engines, welders and electric sets up to 650 HP (maximum output capacity) and 350 KW. Also available is a complete line of marine engines up to 500 HP (continuous duty).

You have your choice of hundreds of variations. All units incorporate the latest advances in modern heavy-duty design. They're available as original or replacement power for excavators, cranes, ditchers, asphalt plants, crushers, compressors, welders, electric sets, pumps, drill rigs, sawmills and other equipment.

See the following pages for a summary of this rugged, modern power line. For complete information, see your Caterpillar Dealer!


D397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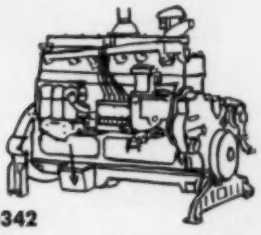
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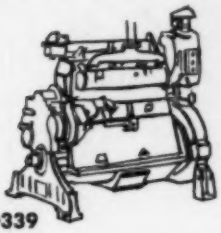
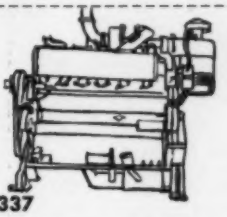

D339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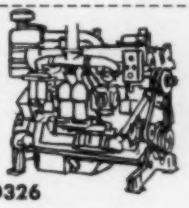
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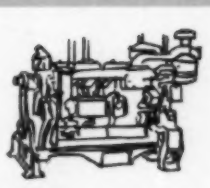
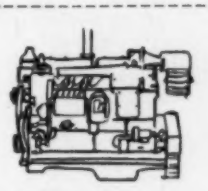
D311

D315


D318

D315
(Series G)


D318
(Series G)

MODERN HEAVY-DUTY CATERPILLAR DIESELS

for Excavators, Cranes, Ditchers, Asphalt Plants, Crushers, Compressors, Welders, Electric Sets, Pumps, Drill Rigs, Sawmills and other equipment

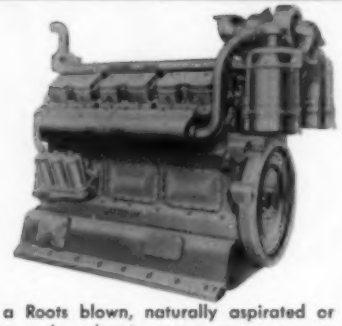
What modern heavy-duty diesels are

Compared with the heavy-duty diesels of the past, modern heavy-duty Caterpillar Diesels are compact and sturdy. They're the latest results of Caterpillar research to increase production and lower operating costs in your equipment. Manufactured by modern techniques from modern materials, they save space, fuel and maintenance time in any application. Bulk has been eliminated. Power and longer life have been added by superior design and metallurgy.

Why they do a better job than ever

Caterpillar's modern heavy-duty diesels feature the four-cycle design which provides a smooth, long, effective power stroke and a more efficient utilization of power. They require practically no attention. Their fuel system requires no adjustment. There are no cylinder ports to clean. And Caterpillar's single-orifice fuel injection valves combined with the precombustion chambers permit use of a wide range of fuels including premium diesel fuels as well as low-cost No. 2 furnace oil. All these and other features add up to new performance standards in diesel power!

For complete information about modern heavy-duty diesels, see your Caterpillar Dealer



D397

with Turbocharger

650 HP*

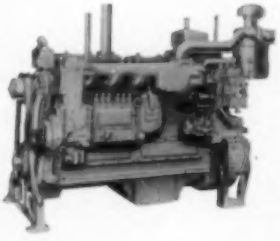
Also available as a Roots blown, naturally aspirated or spark-ignition engine, and as electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D339

Naturally Aspirated

140 HP*

Choice of air, electric or gasoline starting system.



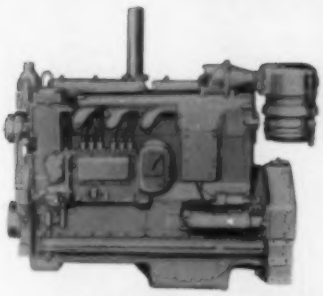
D318

Naturally Aspirated

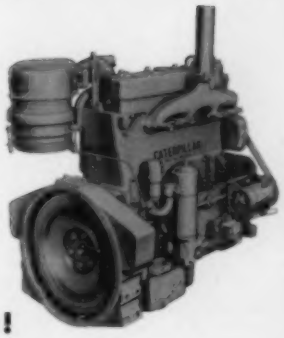
137 HP*

Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

NEW D318
(Series G)
Turbocharged
175 HP*



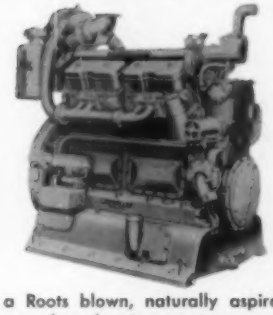
NEW D315
(Series G)
Turbocharged
115 HP*



SMALLER, LIGHTER AND LOWER PRICED!

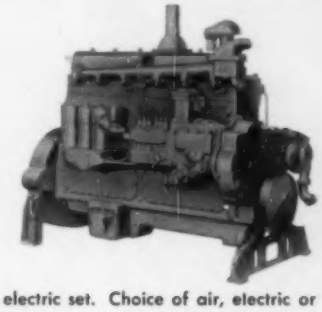
Keeping in line with Caterpillar's continued diesel leadership are these new Series G engines. They are designed for use in installations where space is at a premium. Both are small, light and low-priced; yet they deliver dependable power with the renowned Caterpillar durability. Also available naturally aspirated (shown above). Choice of air or electric starting system.

D375
with Turbocharger
430 HP*



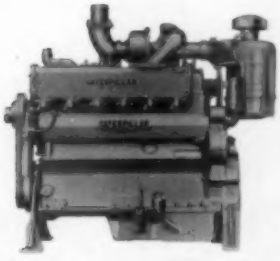
Also available as a Roots blown, naturally aspirated or spark-ignition engine, and as electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D342
Naturally Aspirated
210 HP*



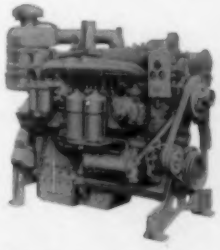
Also available as an electric set. Choice of air, electric or gasoline starting system.

D337
with Turbocharger
310 HP*



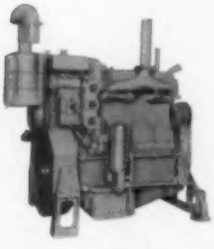
Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D326
Naturally Aspirated
200 HP*



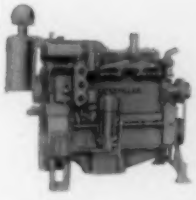
Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D315
Naturally Aspirated
91 HP*



Also available as an electric set or torque converter power unit. Choice of air, electric or gasoline starting system.

D311
Naturally Aspirated
65 HP*



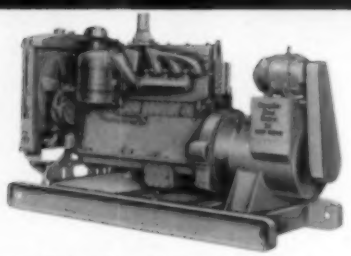
Also available as an electric set. Choice of air, electric or gasoline starting system.

*Maximum output capacity

Modern heavy-duty CAT* Diesels

ELECTRIC SETS

Dependable electric power, featuring the new Cat Generator, available in standard voltages, 60-cycle in the following KW sizes: 30, 40, 60, 100, 150, 165, 200, 225, 250, 315, 350. Also available as 50-cycle and D.C. units.



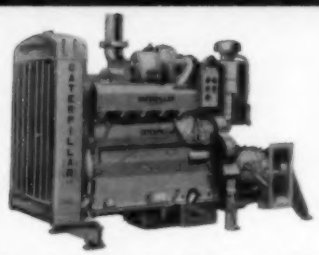
The new Caterpillar Generator brings you the best features of self-regulated and externally-regulated generators in one compact package. It means more for your money. While Caterpillar is prepared to supply you with almost any kind of generator you specify, your best buy is the Cat self-regulated Generator.

Advantages of the new Cat Generator

1. Designed to match exactly the Cat Engine powering it. **2.** Regulator with no moving parts provides steady, self-regulated voltage, no load to full load. **3.** No adjustments necessary after installation. **4.** Easily installed, no complicated switchgear or external voltage regulators are needed. **5.** Easily synchronized with other generators now in use. **6.** Big electrically, handles surge of heavy loads; rugged and easy to maintain; small and compact.

TORQUE CONVERTER POWER UNITS

Many different arrangements are available for each of six Cat Engines to provide you with a greater selection of power packages.



Wide choice of power units: Engine and torque converter; engine, clutch and torque converter; engine, clutch, torque converter and reverse gear.

Wide choice of output shafts: Standard heavy-duty drive for side loads; narrow chain housing for side loads; wide chain housing for side loads; output shaft for in-line loads only.

Advantages of Cat Torque Converter Power Units

1. Torque output is automatically matched to load. **2.** Loads start smoothly. **3.** Load movement can be controlled without using clutch. **4.** Overloads cannot stall engine. **5.** Need no special hydraulic oil — their fluid is engine fuel — fluid level automatically maintained. **6.** Cat Diesel Engine burns a wide variety of fuel oils cleanly and efficiently, even when idling.

Specify modern power—Caterpillar power!

On this page—and the three preceding pages—you've seen a summary of Caterpillar's modern heavy-duty engines. Either as original or replacement power, there's one among the hundreds of different arrangements that exactly meets your needs. Leading manufacturers of machinery can supply these models in the equipment they build. For complete details about them, see your Caterpillar Dealer. He backs you with prompt service. He has the experience and technical knowledge to help you with your power problems!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

HUNDREDS OF DIFFERENT UNITS TO MEET YOUR POWER NEEDS

WANTED— THE HARD WORK

PRINTED IN U. S. A.

George Spencer (left), the "son" part of S. D. Spencer & Son, and Bob Dorman of D-H Paving Co. discuss a grading and paving job the two firms are handling.

Spencer . . .

Continued from page 32

Major diesel tractor with Bros pneumatic roller for compaction work, and a small shop-assembled screening plant which is used for the production of gravel ballast on highway sub-base jobs. The company is taking more and more of this type of work . . . it often works out well in a winter schedule.

Spencer is always studying new ways to improve shovel operating efficiency. Few excavation superintendents of major United States construction companies watch their dirt spreads as closely as Spencer.

Skillful Drivers

Wherever possible, borrow pit loading is planned so that a straight-in, drive-through type of haul road can be used. That eliminates backup trouble and lost time. The perfect approach from Spencer's viewpoint is a coordinated movement between truck driver and shovel operator, so that the truck comes in fairly rapidly, slows down as it nears the loading point, and creeps the last few feet until its position under the searching shovel dipper is exactly right. At that moment, the shovelrunner drops the dipper load of material squarely in the middle of the truck bed, and the truck driver locks his brakes.

Simple as this little trick is, however, it's one of the hardest things to perfect. Some truck drivers take diabolical delight in bolixing it all up, much to the exasperation of good shovelrunners. In one such case, things built up to a running feud which exploded like Mount Vesuvius one day, with the shovelrunner cussing out the truck driver, the driver crawling out of his cab with a Crescent wrench to do battle, and the shovelrunner threatening mayhem while he held the man at bay with the dipper.

Spencer admonishes his shovelrunners constantly not to rehandle material if it can be avoided. It's his idea that most swings can be shortened and made to count for pay. If a bank must be broken down with the dipper open, it can usually be worked on between trucks.

Other points stressed by the Vancouver contractor are the constant cleaning and lubrication of the shovel, so that breakdown trouble can be avoided. Major trouble and breakdowns can be anticipated far enough in advance, if an operator is alert, so they can be fixed ahead of time on off days or week ends.

Proper maintenance of equipment, of course, is one of the important keys to high production. Spencer's headquarters shop is located at 4506 Northeast Jaggy Rd., in Vancouver's northeast environs. In the main shop are two large equipment repair bays, where two trucks can be worked on simultaneously. Key men in the organization are given extra employment during the winter months helping to repair their trucks. When work opens up big in the spring, a key force is on hand to operate the equipment.

It is Spencer's idea that a sizable

Continued on page 58

ARBA Road Show

Thousands of roadbuilders recently converged on Chicago's International Amphitheatre, swarming over the largest variety of shovels, cranes, trucks, tractors, scrapers, drills, pavers, mixers and allied equipment ever assembled under one roof.

It was the busy week of the 1957 American Road Builders' Association Road Show, January 28-February 2. Some 67,000 visitors—most of them highway contractors, officials and engineers—took in the Show.

They saw more than $12 million worth of equipment displayed in a half-million square feet of floor space—enough room for 12 football fields.

Cost to members of the Construction Industry Manufacturers Assn., who staged the event, was set at $8 million by Kenneth Lindsay, Cedar Rapids, Iowa, retiring CIMA president.

Here's how one visitor to the Road Show summed up his impressions: "I think the manufacturers have come up with even more than the contractors were looking for," said David Haines, distributor from Dallas, Tex. "Some of these rigs are far beyond their expectations."

Four national associations held annual conventions simultaneously with the Road Show. The ARBA convention drew thousands of delegates to general sessions featuring national highway leaders. Modern engineering methods were subjects of discussion at 47 technical and committee meetings.

Associated Equipment Distributors registered more than 4,200 delegates at sessions on the problems of merchandising equipment. Nearly 4,000 foreign visitors attended functions sponsored by the International Road Federation. The National Bituminous Concrete Assn. also held a two-day meeting during the exposition.

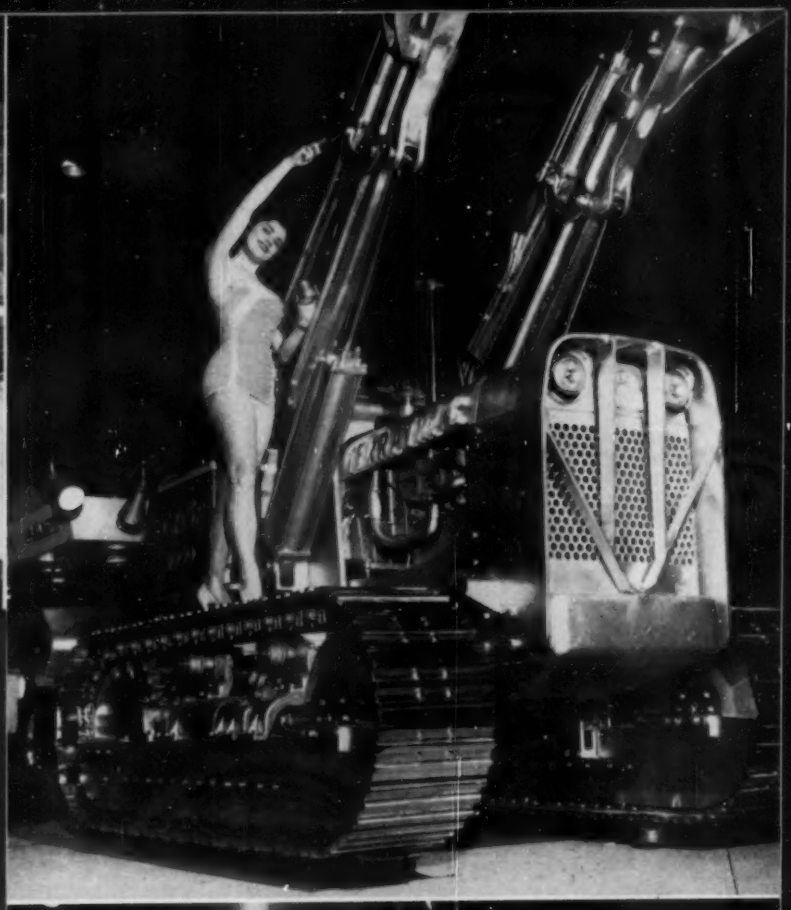
▲ New entry in the off-highway field is LeTourneau-Westinghouse LW 30 featuring "air ride."

Seen at the... "WORLD'S

◀ Minding an inquisitive class for United States Steel is a pair of "schoolmarms."

Delegates get the feel of controls of an Allis-Chalmers Forty Five motor grader. ▼

Enthusiastic viewers jam exposition hall's Lincoln Highway.



Gilded and chrome-plated Case Terratrac 2-yd. loader has plenty of glamor that rates attention.

BIGGEST"

Tall Bucyrus-Erie crane heaves noses up into the arched roof at roadbuilding's "high hangies" jam arena floor.

Miss Caterpillar (Joanne Rose) greets guests John Volpe (left) interim highway administrator; Bertram D. Tallamy, permanent administrator; and Gen. Louis W. Prentiss, ARBA's executive vice president.

News from the Field

Awardees are S. D. Sturgis, Jr. (left); Ben Arp; A. H. Ayers; W. J. Rohan; R. B. Diemer; O. W. Peterson; E. M. Whipple; A. J. Gock; A. F. Garlinghouse; and W. E. Kier.

Beavers Honor Eleven

Eleven prominent figures in western heavy engineered construction were honored at the second annual Beavers awards dinner held January 17 at the Biltmore Hotel, Los Angeles, Calif. Awards were presented in the following divisions:

Management: W. J. Rohan, Minneapolis, Minn., and W. E. Kier, El Segundo, Calif.

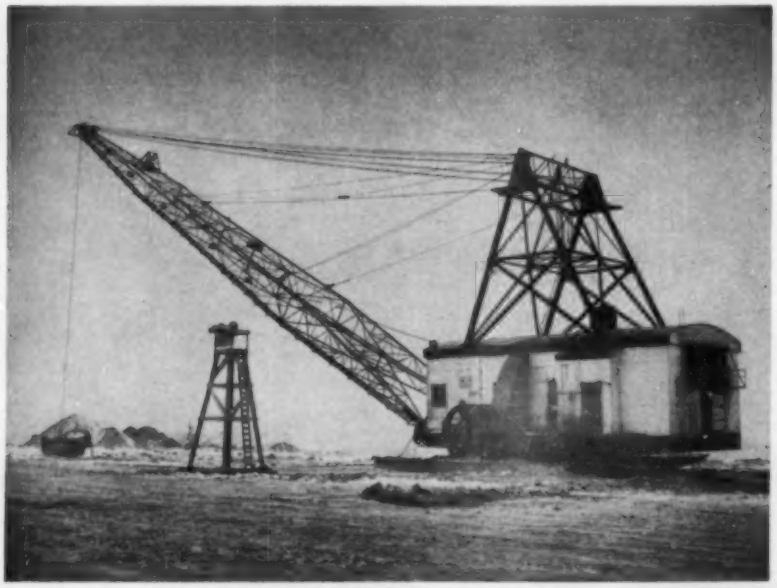
Supervision: Edwin M. Whipple, San Francisco, and Ben Arp., Colfax, Calif.

Engineering: Augustine H. Ayers, Woodside, and Otto W. Peterson, Oakland, Calif.

Supply: A. F. Garlinghouse, and A. J. Gock, both of Los Angeles.

Special service awards were given to Samuel D. Sturgis, Washington, D. C., and Robert B. Diemer, Los Angeles. Also, a posthumous service award was made to William A. Johnson, a past president of the group.

New Beaver officers elected were: George H. Atkinson, president; John A. Kier, vice president; John M. Sawyer, vice president; J. P. Shirley, Jr., secretary-treasurer; J. W. Watson, assistant secretary-treasurer; and James L. Lovell, ambassador of goodwill. The new officers will serve one-year terms.



The Gentleman, a 15-yd. Bucyrus-Erie 450-W walking dragline owned by Badgett Mine Stripping Corp. is temporarily working for McNamara Construction Co.

Stranded Dragline Goes to Work

An accident may turn out to be a piece of good fortune for the Badgett Mine Stripping Corp., Madisonville, Ky., one of the St. Lawrence Seaway project's chief excavating contractors.

Last December, the Badgett firm ended work on its contract to move 3,800,000 yards of glacial till and marine clay for the Long Sault Canal near Massena, N. Y. The company started to move its 650-ton walking dragline, *The Gentleman*, to a new contract site in a warmer southern climate in the United States. Mounted on a barge, the dragline was being towed through Galop Rapids by a tug when the tug struck a rock ledge and sank. Cast adrift, the barge and its load grounded on Galop Island.

Navigation ended the following day and it was feared *The Gentleman* was stranded. However, McNamara Construction Co., Toronto, Ont., heard of the dragline's plight and decided to capitalize on the availability of the machine, a Bucyrus-Erie 450-W whose 15-yd. bucket is big enough to hold a car. The machine will be used in McNamara's channel extension work in the rapids area.

The machine works 24 hours a day and can move 10,000 cubic yards of material in that period. It has a 900-hp

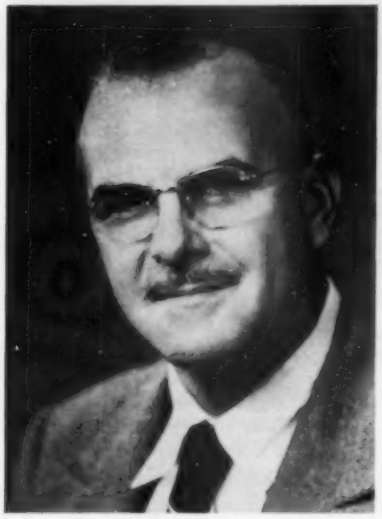
Cooper-Bessemer JS-8 8-cylinder, 4-cycle diesel engine. Its boom is 187 feet long. It supplies its own motive power by a pair of walking shoes or skids which enable it to move 15 feet a minute.

The Gentleman walked from its barge to shore and to the work site where it will remain until spring, at least. It is the largest piece of earthmoving equipment on the St. Lawrence project.

Weiss Leaves Imperial Valley

B. A. Weiss, executive engineer and general superintendent of the Imperial irrigation district in California, will go to Iran to become engineer in charge of the resources development program being carried on there by Development and Resources Corp., New York, N. Y. He will begin his new duties in Iran in April.

His appointment was made by David E. Lilienthal, chairman of the board of



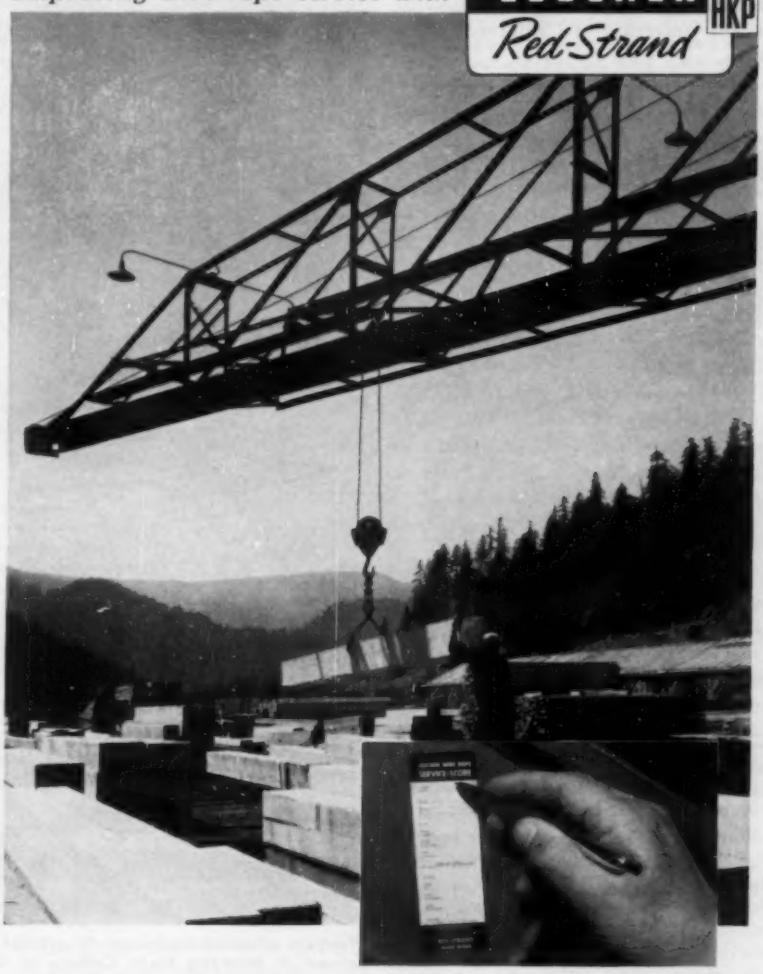
B. A. Weiss

the corporation, which last year signed an agreement with the Iranian government to develop the five rivers of the southwestern Khuzestan region for irrigation, power and flood control, and to promote agriculture and industry there along the lines of the Tennessee Valley program. Lilienthal and the president of Development and Resources Corp., Gordon R. Clapp, are both former TVA chairmen.

Two other engineers also are joining the corporation's staff and will work under Weiss's supervision in Iran.

They are George A. Brokaw, Jr., who was recently a consulting electrical engineer to the government of Turkey,

Improving wire rope service with LESCHEN *Red-Strand* HKP



How much can you save with Leschen wire rope service?

Wire rope costs can be reduced substantially—10%, 20% or more—by using the right rope type, construction and brand for every job.

How can you tell if you are using the right rope? How much can you save? There's a simple way to find out. You can obtain accurate, on-the-job performance data by using Leschen's Service-Score Sticker System. You'll prove to yourself which ropes work best. And when you see the score, you'll use more Red-Strand wire rope—because Leschen quality and Leschen engineering service can save you money.

Service-Score Stickers are available from any Leschen field man or distributor. Just ask, or write Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.

HKP LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.

and Frederick L. Hotes, associate professor of civil engineering and irrigation at the University of California at Berkeley.

Their work will be under the general supervision of William L. Voorduin, the corporation's engineering director. They will work closely with the corporation's chief representative in Iran, John B. Blandford, Jr. For the last 13 years, Weiss has been in charge of operation, engineering, construction and power activities for the Imperial district, which is the largest and probably the best-known irrigation development in the United States.

Development and Resources Corp. was formed in 1955 by Lilienthal, Clapp and the investment banking house of Lazard Freres & Co., New York, to provide planning and administrative services in resource development to countries outside the United States.

The firm began engineering studies and other investigations last summer in the 58,000-square mile Khuzestan region. These studies will lead this year to the proposal of the first in a series of multi-purpose river dams to be built as part of the region's long-range development. All proposals must be approved by the Iranian government's Plan Organization, an agency established in 1949 to use from 60 to 80% of Iran's oil revenues for the country's economic advancement.

Timbers of glued laminated fir present a dramatic pattern as the 300-ft. diameter arena of Montana State College at Bozeman is roofed. Arches rise to 90 feet.

Spectacular Timber Dome

A timber dome just completed at Bozeman, Mont., is the latest record-breaker among wood structures being built throughout the country to provide large areas of post-free space for spectator sports.

With a 300-ft. diameter, the main arena of Montana State College's new physical education center passes all records for long span in buildings of glued laminated timber construction, according to the National Lumber Manufacturers Assn.

Large enough for football and baseball practice, the building seats up to 15,000 persons for other sports.

The dome structure is a dramatic webbing of glued laminated arches and purlins soaring to 90 feet at the center. It rests on columns standing outside the perimeter wall of the arena. Lumber required for the dome system, which was fabricated and erected by Timber Structures, Inc., Portland, Ore., amounted to 150,000 board feet, or enough to build 15 average size homes. The giant arches were manufactured in segments 51 feet long and shipped by rail.

Erection of the dome itself took only ten weeks. The arches were assembled on the ground in pairs with purlins, sub-purlins and cross-bracing in place. The pie-cut shaped sections were then hoisted to position by two 100-ft. boom cranes.

Cost of the structural glued laminated dome in place was $2.20 per square foot. Total cost of the main arena, including balcony, locker rooms, floors, concourse, heating and ventilating and special facilities, was $1,222,206, or $9.90 per square foot. In addition to the completed main arena, the project includes a two-story wing, housing administrative offices and an entrance lobby, to be completed by June 1.

Fred Wilson and Oswald Berg, Jr., Bozeman, were the architects of the project. Haggerty Messmer Co., also of Bozeman, was the general contractor.

Asphalt Grades Reduced

In a move to streamline road paving methods, the Asphalt Institute, College Park, Md., has adopted a reduction in the number of grades of paving asphalts from nine to five.

President J. E. Buchanan said that the institute's action followed a series of exploratory discussions with asphalt users, highway officials and refinery representatives.

Four basic paving grades now officially recognized by the institute are listed at 60-70, 85-100, 120-150 and 200-300 penetration. A fifth grade of 40-50 penetration asphalt is recommended for special and industrial uses.

"The advantages of the reduction in grades are evident," Buchanan said. "It

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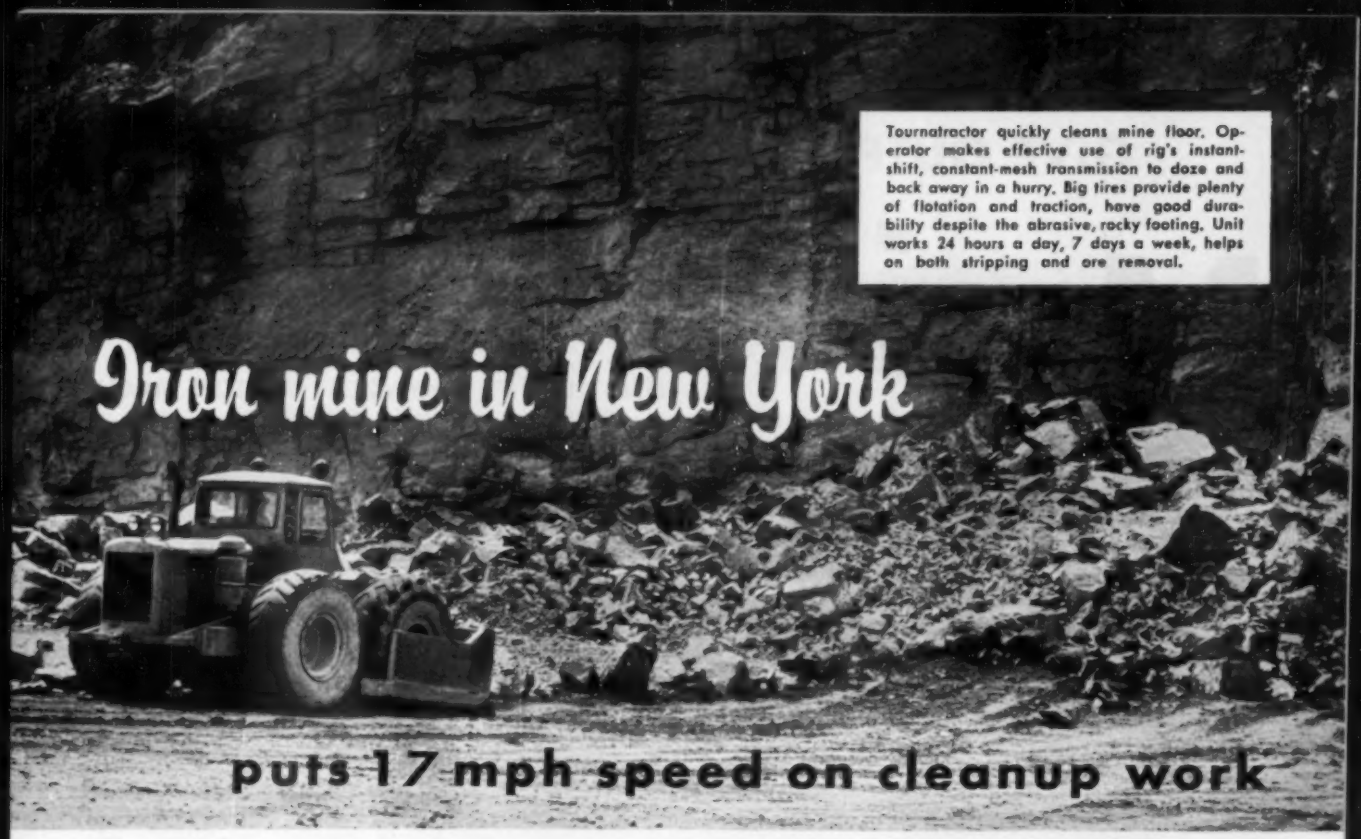


Tournatractor quickly cleans mine floor. Operator makes effective use of rig's instant-shift, constant-mesh transmission to doze and back away in a hurry. Big tires provide plenty of flotation and traction, have good durability despite the abrasive, rocky footing. Unit works 24 hours a day, 7 days a week, helps on both stripping and ore removal.

Iron mine in New York puts 17 mph speed on cleanup work

- **Rubber-tired tractor clears mine-floor after blasting**
- **Rig also cleans up around 4½-yd. shovel**
- **In winter, plows snow from haul roads and blast areas**

With drilling and blasting done throughout the day along an ore body two miles in length, this New York open-pit iron mine has a major cleanup problem. They have licked the problem with the speed and maneuverability of a rubber-tired Tournatractor.

On the relatively long runs between operating faces, this 17 mph rig makes a much faster trip than could a crawler-tractor. Another advantage of Tournatractor is that it does not cut-up the surface of the haul roads like a crawler does.

During winter, Tournatractor also finds time to plow snow from the pit roads and loading areas. It also clears areas to be blasted. This keeps snow from getting mixed in with the shot rock and later from causing trouble inside the crushers.

"Excellent on night shift"

For work on the night shift, owners are particularly pleased with the lights on their Tournatractor. They find that "night work does not slow this rig nor put any limitations on areas where it can travel or work."

For proof of these advantages, ask for a demonstration *in your pit* of this high-speed 208 hp machine. See for yourself how quickly and how economically it will handle your scattered pushing, pulling and dozing jobs.

The ore body being mined here was discovered in 1810 by engineers surveying a military road between Albany and Ogdensburg. Only a small amount of iron was removed, however, until 1944 when modern methods of beneficiating magnetite and low-grade non-magnetic martite ores made the operation profitable. This year, 1,300,000 gross tons will be processed. All will be taken from a deposit slightly over 2 miles long and 200′ to 1400′ wide. Iron content averages 24%. Overburden includes a structural hanging wall of granetized gneiss, plus up to 60′ of glacial drift (mostly sand, hardpan, and boulders). Height of operating faces is set at 50′ except for some first cuts of 100′. Drilling is made with 42-T and 50-T churn drills, with chrome-nickel-moly bits of 4340 grade. Nine-inch primary holes are spaced about 23′ apart and burden at toe is kept as close to 20′ as possible. Every pound of explosive breaks about 2.35 gross tons of crude ore. This is loaded by 4½-yd. shovels into 22-ton rear-dumps and transported to the 54 inch primary crusher. Rock chunks too big to pass the 4½-yd. dipper (about 1 chunk per 40 tons of crude ore) are reduced to handling size by a 4-ton drop ball handled by a truck crane.

Tournatractor—Trademark T-751-M-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

GIVE OUTPUT AND PROFITS A JET-ASSISTED

Marionair CONTROL

USED ON ALL DIESEL POWERED MARION MACHINES

The hardest working air in the world passes through Marionair Controls. It knocks the wind out of the toughest jobs — and finishes most of them in a breeze. It's like harnessing a hurricane . . . taming a tornado . . . turning their energy into job profits.

Why Air Control —Air is safe: no shock or fire hazard. Air is simple, without costly and complicated linkage. No return lines needed. Operating men understand it easily.

Why MARIONAIR Control—Only Marion went all the way with air control as early as 1940; only Marion has devoted 16 years to its refinement and perfection. Marion has the world's broadest line of air controlled excavators and cranes. Marion makes air do more.

Easy Does It —Marionair Control gradually and smoothly exerts from 0 to 90 or more pounds of pressure on the clutches, in direct proportion to hand pressures on the controls. It is easy to use, easy to service.

Efficiency Goes Up—Operators remain fresh and alert all shift long because Marionair Control virtually eliminates operator fatigue. "Feel of the load" is retained, helping the operator to work confidently and efficiently.

Easier Maintenance—Its simplicity means fewer maintenance problems. No rods, levers and pin connections to become loose with wear.

Smooth Performance—A smooth, positive flow of power to the clutches, without jerkiness or delay. No need for a fine sense of timing to put the dipper, bucket or crane load where you want it.

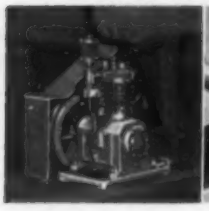
FIELD PROVED FOR 16 YEARS

Marionair Controls have been proved by 16 years on-the-job . . . by all types of service and working conditions. Marionair Control has been integrated into the basic design of machines. Marion has made fullest possible use of compensating valves for gradual, smooth engagement of friction clutches . . . quick-release valves for jaw clutches and other "on or off" controls. Marionair Control puts full power at the operator's finger tips . . . gives him instant, accurate control of the load. Put Marionair Control's "muscles of air" to work on your jobs. Let a compressor—not your operator—do the huffing and puffing.

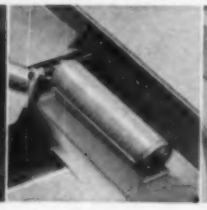
CRANE EXPERTS: HEAR THIS!

When Marionair Control is teamed with big, smooth Marion clutches, a torque converter and a foot accelerator, you are ready for the most ticklish precision crane jobs involving the lightest or heaviest loads. One foot on the accelerator can lift the load, lower it, inch it into position or hold it indefinitely in one position.

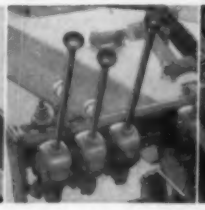
MARIONAIR CONTROL STEP-BY-STEP



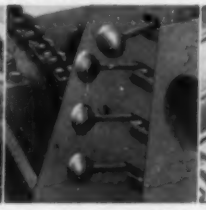
Dependable, kingsize compressor, operated by power unit through V-belt drive, has capacity to maintain full pressure in extremely fast cycles; its operation is automatically controlled.



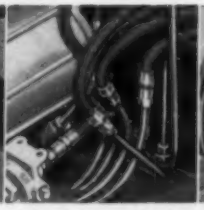
Pressure accumulator tank, in out-of-the-way pocket of upper frame, stabilizes pressure entering the lines; fitted with safety release valve and outlet for use in draining excess condensate.



Compensating valves "meter" air to cylinders or expanding tubes controlling friction clutches. Operator retains feel of the load, gets smooth, gradual engagement or fast, crisp cycle time.



Quick-release valves govern operation of jaw clutches and other "on-or-off" controls. Operator's wrist movement produces instant, positive action. Controls conveniently grouped on panel in cab.



Strong copper tubing and heavy-duty flexible hose carry air pressure to all parts of machine; replace conventional levers, rods and pins. Operators like simplicity and reliability of air.

Marionair Control engages this clutch in direct proportion to the speed and firmness of the operator's hand pressure on control lever. The response is uniform, consistent and dependable every time.

AIRLIFT WITH

MARION

POWER SHOVEL COMPANY

MARION, OHIO, U. S. A.

A new industrial engine plant containing 500,000 square feet of floor space will be built by Caterpillar Tractor Co. at Peoria, Ill.

News . . .

Continued from page 42

will simplify the storage and handling problem at the refinery and will certainly make these standard grades more readily available from all asphalt refiners. In turn, the user can reasonably expect better service in delivery and superior distribution of the paving product."

Eliminated by the Institute were those grades in the intermediate ranges: 50-60, 70-80, 100-120 and 150-200 penetration. The penetration value defines the consistency of the asphaltic cement, ranging upward from extremely hard to very soft. The institute reports that it is satisfied the skip-grading will not affect the quality of the resulting mix.

A project committee is currently working toward a reduction in grades of the rapid-curing, medium-curing and slow-curing groups of liquid asphalts.

Caterpillar Expands

Plans to build a 500,000-sq. ft. industrial engine plant were recently announced by H. S. Eberhard, president, Caterpillar Tractor Co., Peoria, Ill. The firm also announced its intention to construct a multi-building research center and a general offices building. All three facilities will be located on a 1,100-acre site 12 miles north of Peoria.

Site preparation for the engine plant is scheduled to begin within the next few months and construction dates for the research center and office building will be established after planning and engineering work has been completed. The engine operation will begin production during 1958.

Approximately 3,500 people will be employed in the new area when all facilities are completed. About 1,200 will be employed in the engine plant.

Construction of these facilities will be part of the company's over-all building program—the total cost of which is estimated in excess of $200 million for the next three years. Since 1948, the firm has grown from a two-plant operation to eight domestic manufacturing plants and three foreign subsidiaries.

The new plant will manufacture Caterpillar V-type engines ranging up to 650 maximum horsepower in the current line. All other engines will continue to be made at the present Peoria plant. Basic engines intended for industrial use will be moved to the industrial engine plant where attachments, specially engineered to equip them for use as industrial and torque converter power units, marine engines or electric sets, will be added.

Iley P. Payne

Iley P. (Crip) Payne, manager of sales, Construction Equipment Div., International Harvester Co., Chicago, Ill., succumbed to a heart attack in his home in La Grange, Ill., January 14.

Mr. Payne joined the Harvester organization in 1924 at New Orleans, La. He served at that district office, and at Jacksonville, Fla., and Atlanta, Ga. He was appointed assistant district manager at Atlanta in 1941.

In 1943, he entered military service. He was released from active military duty with the rank of major in 1946. Upon his return, he resumed his duties at Atlanta. In 1947, he was appointed district manager, farm equipment sales, at Houston, Tex.

Mr. Payne was appointed assistant manager of farm equipment sales in 1949 and held that position until 1953, when he was appointed manager of sales, Construction Equipment Div.

He is survived by his wife, Aline, and two sons.

Name Cement Assn. Engineer

Lester E. Jordan has been appointed district engineer in charge of the Portland Cement Association's Philadelphia (Pa.) office. He succeeds R. M. Reindollar, Jr., who resigned to join an engineering firm in Baltimore, Md.

Jordan joined the association in 1947 as a paving and field engineer. In 1954, he was appointed statewide paving engineer for Pennsylvania with headquarters in Harrisburg. As district engineer, he will direct association activities in Pennsylvania, under the over-

Continued on page 48

Roebling Royal Blue Wire Rope will **bend** and **bend** and **bend!**

What's more, Roebling Royal Blue is *stronger* than the strongest wire rope previously available. It will do more work and last longer on *your* job. Call your distributor or your nearest Roebling office for full information about Royal Blue, the really better wire rope. John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Distributors, Branches and Warehouses Throughout the Country—Subsidiary of The Colorado Fuel and Iron Corporation

News . . .

Continued from page 46

all supervision of M. J. McMillan, eastern regional manager, New York, N. Y.

Foreman to Retire from AGC

The executive committee of The Associated General Contractors of America, Washington, D. C., has accepted the resignation of H. E. Foreman, effective April 1, as managing director of the association. The announcement was made by Frank J. Rooney, Miami, Fla., association president.

Foreman, who has been managing director since October 1940, is leaving his post for reasons of health.

The executive committee has named Foreman advisor to the association in recognition of his long service.

"The committee wants to pay tribute to the outstanding leadership which Doc Foreman has provided to the association since 1940," Rooney said. "While we regret that this action becomes necessary, we are pleased that he will continue to be active in the association and the benefits of his talents and experience will continue to be available."

Foreman is one of the most widely known men in the construction industry. He has been a spokesman for the general contracting industry before Congress and the government. He is a member of a number of committees advisory to the Commerce Department, Labor Department, President's Conference on Industrial Safety, Bureau of the Budget, and Federal Civil Defense Administration.

James D. Marshall, who has been executive director since 1953, assumed full responsibility for the association's management in April 1956. Since then, Foreman, while retaining the title of managing director, has been acting in an advisory capacity.

The AGC represents more than 6,700 member construction firms.

" 'Mammoth Construction Company: Gentlemen: Regarding the building you constructed for us recently—is it supposed to settle?' "

Equipment You Ought to Know About

Durolite Blocks and Sheaves

Manufacturer: Sauerman Bros., Inc., 6225 28th Ave., Bellwood, Ill.

Claims: Durolite blocks and sheaves used on all Sauerman DragScraper machines and cableways are now available as separate equipment. The sheaves are lighter in weight than other sheaves of the same rated capacity but provide high structural strength and durability for handling heavy loads at high speeds. They start instantly and stop without spinning. The sheaves are available in

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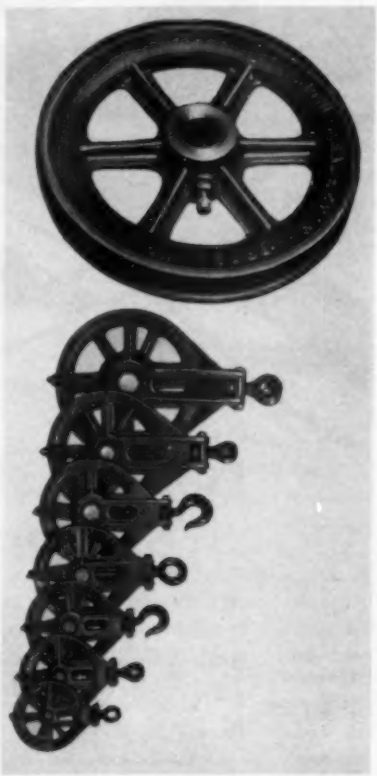


B-60 SERIES—All-around workhorses for construction jobs everywhere. B-60 four- and six-wheel chassis are available for dumpers, concrete mixers, equipment hauling tractors, and flat-bed trucks . . . powered with Mack Thermodyne® gasoline or diesel engines in the 170 or 205 horsepower range.

B-80 SERIES—Largest and most powerful highway and off-highway chassis in the Mack line. B-80 tractors for heavy carry-all trailers and B-80 truck chassis for mixers and dumpers are available in four- or six-wheel models . . . powered with 170 to 205 hp Mack Thermodyne gasoline or diesel engines, or stock diesels in the 250 to 300 horsepower class.

B-40 SERIES—Widely popular for maneuverability and rugged strength. B-40 four- or six-wheel dumpers, mixers, flat-bed trucks and tractors are especially valued for their bonus capacities, economy, and handling ease. Powered by Mack 150 hp Thermodyne diesel or Magnadyne gasoline engines.

Most in demand . . . for the most demanding jobs

For dump, mixer, or flat-bed truck service in highway and off-highway hauling, Mack large-capacity trucks and tractors will do your toughest, most demanding jobs more efficiently, more economically, and more profitably. More, Mack offers you the widest selection of heavy-duty units with gross vehicle weights ranging from 25,000 to 65,000 lbs. and tractors for carry-all trailer service up to 175,000 lbs. G.C.W.

Have your local Mack representative give you complete details and specifications. Mack Trucks, Inc., Plainfield, New Jersey.
In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

4839

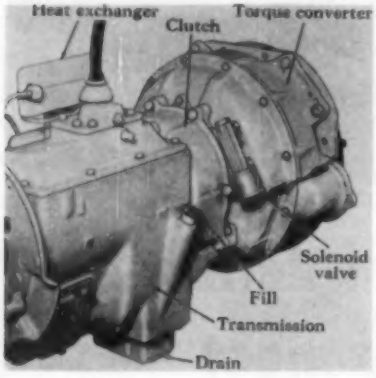
New Equipment . . .

Continued from page 48

stock sizes from 6 to 18 inches (alloy steel) and 20 to 24 inches (cast steel).

Durolite blocks feature end thrust bearings to prevent side-frame wear; free-moving swivels for easy positioning; and a cast bead on the side-frames to prevent fouling of the wire rope. They are available from stock in sizes from 6 to 18 inches with bronze bearings and from 8 to 42 inches in roller bearings. Sizes up to 54 inches or specials can be furnished to specification.

Select-O-Matic Transmission



Manufacturer: Motor Truck Div., International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Claims: A new Select-O-Matic transmission is now available for heavy-duty International trucks. It was displayed to the public for the first time at the recent National Automobile Show in New York, N. Y.

The Select-O-Matic unit features an electro-hydraulic clutch and high-efficiency torque converter of exclusive International design, in combination with a five-speed synchromesh transmission. It delivers advanced truck performance and fuel economy while greatly reducing driver effort through elimination of the clutch pedal.

Positive control of gear selection is maintained at all times for greater safety under all operating conditions.

The electro-hydraulic clutch is disengaged for shifting by a "magic button" located under the gear shift knob.

Automatic torque multiplication is achieved through the converter which doubles the torque transmitted to the wheels when starting and prevents engine lugging. When more torque is required, for acceleration or slight upgrades, the converter automatically supplies it. As a result, engines operate in maximum efficiency ranges for longer periods and the need for two-speed axles and auxiliary transmission under normal conditions is eliminated.

Driver effort is further reduced by the fewer number of gear shifts required through use of the torque converter.

International Select-O-Matic torque converters are built to match the engines to which they are coupled. They are offered in 13 and 14-in. sizes, each with variations in number of fins and spacing, to deliver maximum torque from a specific power plant.

The torque converter utilizes a variable displacement oil pump that transmits maximum power at all speeds. As a result, a high efficiency rating is achieved.

The transmission is lubricated by the same type hydraulic fluid used in the torque converter. This lighter-viscosity fluid absorbs less power than the heavier lubricants of a standard transmission and contributes to the unit's increased operating efficiency.

Correct matching of engine, torque converter, hydraulic clutch and transmission results in a compatible power train that provides greater fuel economy and greater protection than a conventional transmission. Shock loads are absorbed by a cushion of oil, giving greater protection to the transmission, drive line, differential, rear axle shafts, bearings and tires.

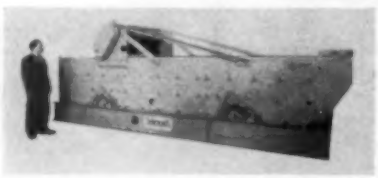
Elimination of the dry disc clutch is another advantage of the transmission. The hydraulic clutch is engaged and disengaged by the button on the shift knob without drag or slipping, eliminating wear and the need for adjustment and relining.

Triple Deck Screen

Manufacturer: Iowa Manufacturing Co., Cedar Rapids, Iowa.

Claims: A new 60-in. x 16-ft. triple deck model has been added to round out the line of Cedarapids horizontal vibrating screens.

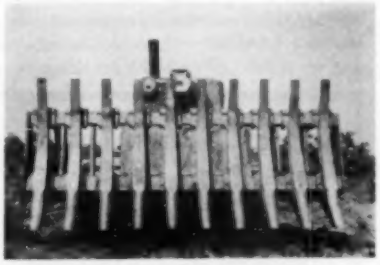
The screen, which is the largest in the line, is designed for high capacity in heavy-duty applications in stationary crushing and screening plants.



The horizontal position of the Cedarapids screen is said to provide as much as 12½% more screening area than an inclined screen of the same length, because the level position of the screen cloth openings permits more material to pass through each opening. Increased capacity as well as more accurate gradation is claimed by the manufacturer.

A steel plate feed box at the feed end of the top deck takes the initial impact of material being fed to prevent damage to the screen cloth and to spread material across the full width of the screen. The open discharge end of the unit prevents jamming of oversize material. The screen box and screen cloth support frames are heat-treated to relieve any stresses that might occur in the weldments.

Fleco D9 Rake



Manufacturer: Fleco Corp., Jacksonville, Fla.

Claims: A new Fleco D9 rake is available for Caterpillar D9 tractors for land clearing operations.

The rake has specially designed teeth and frame to give strength to withstand severe shocks and heavy loads. It uses the same C-frame or push arms as an angle or straight dozer and is easily interchangeable with the dozer. It is designed for clearing large boulders, spreading rock, rip-rap, piling and other types of construction applications.

An important new design feature allows multiple spacing of the teeth to match the clearing conditions and types of material. This permits the number of teeth to be varied from 5 to 10 with equal spacing, allowing varying distances between teeth depending upon the number of teeth desired. The standard D9 rake has 10 teeth.

The frame includes two heavy boxed angle sections with heavy end gussets and intermediate gussets, behind each tooth, for greater strength and rigidity. Teeth are manganese carbon steel cast-

ings, heat-treated for maximum strength and wear. Weight of each tooth is 560 pounds.

Raking width varies slightly with the number of teeth mounted, being 12 feet 4½ inches for 10 or 7 teeth, and 11 feet ½ inch for 9 or 5 teeth. Overall length of the angle model is 14 feet 6½ inches and 13 feet 5 inches for the straight. Height from ground to top of teeth is 6 feet 4 inches and from tip of tooth to lower frame is 17½ inches. This is the maximum depth a tooth can penetrate into the ground.

Total weight with 10 teeth is approximately 9,750 pounds for the angle model and 9,390 for the straight model.

Foundation Pile

Manufacturer: L. B. Foster Co., Pittsburgh, Pa.

Claims: A new type of foundation pile proved by field tests to have exceptional strength characteristics, especially during driving, has been introduced by L. B. Foster.

The pile, called Foster rail pile, is made from three steel rail sections welded together at base edges to form, in cross section, a hollow equilateral triangle with rail heads extending outward at 120°. This design takes advantage of the high tensile yield and compressive strengths of rail steel.

The shape gives the pile a generally symmetrical section so that its section modulus is approximately the same

around any axis. The rail pile effectively resists forces from any direction.

The heaviest concentration of metal in the pile is at the rail heads, which are the flanges of the section. Because of the thickness and rigidity of the rail heads, the pile can push aside obstructions or punch through tough strata

BITES DEEPER DUMPS FASTER

Mighty Ice Tong Principle

Whether you need to rehandle or excavate, you will move MORE IN LESS TIME with a KIESLER CLAM SHELL. Our guarantee (see below) is the result of decades of experimentation and factual impartial testing; using proven principles of leverage and power and applying that power and leverage to both shells the KIESLER CLAM SHELL has more DIGGING-IN ability than any other bucket manufactured. And this digging ability is not dependent on dead weight (counterweights) nor large amounts of cable, hence longer cable life.

Note, too, how little KIESLER shells have to be opened to dump whole load: no "tailing-off" with a KIESLER. This is CONTROLLED DUMPING!

PROMPT SERVICE AVAILABLE

Factory service on Kiesler Buckets and as an accommodation on other makes, too. Whatever the problem, feel free to call on us.

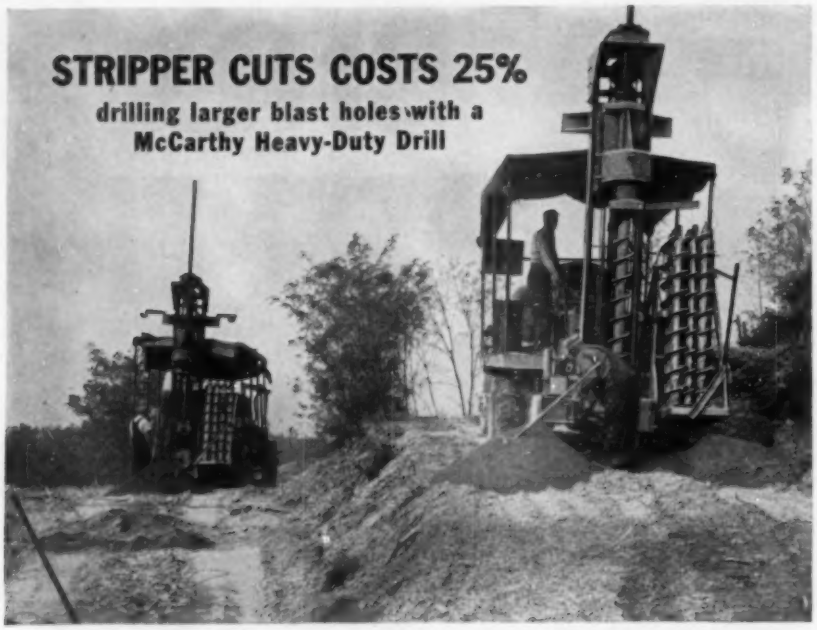
GUARANTEE

Kiesler Buckets are guaranteed to outperform and do a bigger day's work than any other Bucket of equal weight, width and size, when properly reeved and operated.

JOS. F. KIESLER CO.

KIESLER Since 1892

944 W. HURON ST. • CHICAGO 22, ILL. • MONROE 6-7144

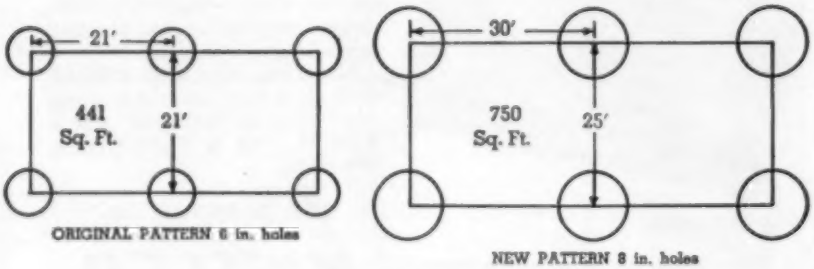


This strip mine operator cut drilling and blasting costs 25% by using this 25' x 30' pattern of 8 in. blast holes—drilled by two McCarthy Heavy-Duty Vertical Auger Drills.

A Southern Ohio strip mine operator cut his drilling and blasting costs by 25% when he widened the blast hole pattern and switched from 6 in. diam. to 8 in. diam. holes. He used McCarthy Heavy-Duty Vertical Auger Drills and a new type of explosive to remove the sandstone overburden.

A cost study made by the operator shows that the McCarthy drill bored the 8 in. holes at less cost than the 6 in. holes. Four 6 in. diam. holes covered 441 sq. ft. Four 8 in. holes covered 750 sq. ft. Since fewer 8 in. holes were required to drill the same area, over-all drilling time was cut in half. In each pattern, the amount of hard rock drilling was the same. The study included five work shifts of two McCarthy Model 106-24 Auger Drills, one using 6 in. and the other using 8 in. flights. The stripper figured all drilling and blasting costs, including fuel, labor, bits, explosives, etc. Over-all cost saving was 25%.

McCarthy Heavy-Duty Vertical Auger Drills drill up to 24 in. diam. holes faster than any other auger drill. Start cutting your costs now by phoning the nearest Salem Tool representative. Or write for Bulletin M-100.



Manufacturer of Drilling Equipment Since 1901

THE SALEM TOOL CO.

799 S. ELLSWORTH AVE. • SALEM, OHIO, U. S. A.

without damage or deflection. Bottom driving plates are usually not necessary.

The compact cross section of the pile, with its short, heavy webs and three thick flanges, protects the pile from longitudinal tearing during driving.

Since it utilizes rail rather than specially rolled sections, the new pile will be available for prompt shipment, according to Foster. It can be driven with any set of conventional leads and hammers. No mandrels or other special equipment are necessary.

The pile will be supplied in sizes ranging from 60 to 133 pounds per foot, and in lengths from 28 to 39 feet or multiples. Sections of rail piles can be butt-welded in the field for especially deep driving.

Foster will be the sole manufacturer and distributor of the new piles, for which a patent has been applied.

Twin-Power Scraper

Manufacturer: Euclid Div., General Motors Corp., Cleveland 17, Ohio.

Claims: A new Twin-Power scraper with 24-yd. struck capacity, has been announced by Euclid. The Model TS-24 is the second overhung-type Twin Scraper developed; the 18-yd. TS-18 unit was introduced a year ago. Incorporating two engines driving separate axles through separate transmissions, the TS-24 is a one-man earthmoving spread. A 300-hp diesel in the overhung type tractor and a 218-hp engine located behind the scraper serve as a built-in pusher. They provide the power and traction required for fast travel speeds on steep grades and difficult hauls.

Allison Torqmatic drives for each engine assure maximum effective use of engine torque by matching a smooth flow of power to varying requirements of loading, hauling and dumping. The Torqmatic drive also permits changing from one of the three speed ranges to another under full power without clutching.

NoSpin differential and Euclid planetary axles in both power trains give the TS-24 maximum traction during loading and heavy going. Payload capacity of the 24-yd. scraper is 80,000 pounds. Standard tires are 27.00 x 33 with 33.50

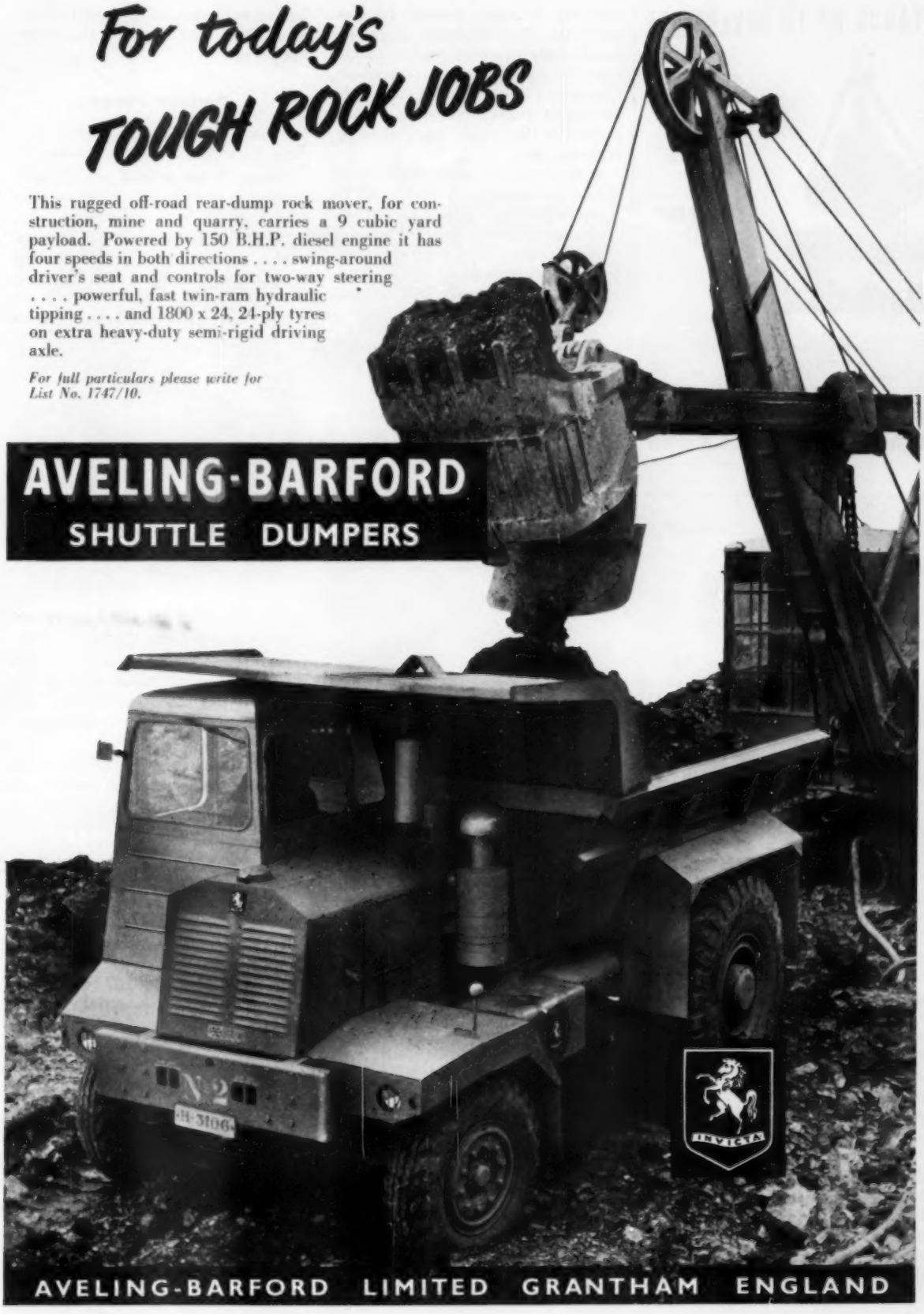
Continued on page 54

For today's TOUGH ROCK JOBS

This rugged off-road rear-dump rock mover, for construction, mine and quarry, carries a 9 cubic yard payload. Powered by 150 B.H.P. diesel engine it has four speeds in both directions . . . . swing-around driver's seat and controls for two-way steering . . . . powerful, fast twin-ram hydraulic tipping . . . . and 1800 x 24, 24-ply tyres on extra heavy-duty semi-rigid driving axle.

For full particulars please write for List No. 1747/10.

AVELING-BARFORD
SHUTTLE DUMPERS



AVELING-BARFORD LIMITED GRANTHAM ENGLAND

STANDS UP TO SEVERE USE

and even abuse

One word describes a Hayward — *ruggedness.* Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

New Equipment . . .

Continued from page 52

x 33 tires available for increased traction and flotation.

The TS-24 scraper utilizes Euclid's hydraulic lever action control of all bowl, apron and ejector operations to eliminate downtime and expense caused by cable breakage.

4-yd. Hydraulic Concrete Bucket

Manufacturer: Blaw-Knox Co., 300 6th Ave., Pittsburgh, Pa.

Claims: A hydraulic concrete bucket in which the power for operation is entirely self-contained has been developed by Blaw-Knox.

The self-contained power feature accelerates placing of concrete, the firm reports. In constructing a dam, quite commonly a contractor will pour as much as a half million yards of concrete with 4-yd. buckets operating from a 2,000-ft. cableway, or from cranes. A job of this size involves 125,000 bucket trips and a saving of even a few seconds per trip results in a substantial saving of time and money for the contractor.

The new hydraulic bucket eliminates the use of an air hose, which must be carried to the placement site, attached and then cleaned of concrete after nearly every placement pouring. It also eliminates the need for compressed air at the site during placement of concrete.

Instead, the weight of the bucket generates the needed pressure for operating the clam discharge gates. The bucket hangs from its pendant on two hydraulic cylinders — or accumulators. Operating a lever on the hydraulic valve permits the bucket's weight to transmit pressure to the gate cylinders which operate the gates.

Sufficient oil is stored in the hydraulic system for emptying a portion of the bucket's load, closing the gates and then reopening them for a second pouring. When the bucket is set down, the spring-loaded pendant drops, reversing oil flow in the hydraulic system. This automatically recharges the bucket for power operation.

Compared with air-operated type buckets, the open and close time of the new hydraulic bucket's clam discharge gates is between two and three times as fast. The four-way operating valve is

spring-loaded to keep the gates closed and will also allow partial gate opening for dribbling operations.

The firm's 4-yd. bucket was chosen as the first to be equipped with self-contained hydraulic power because of the wide popularity of this size bucket in the construction field. The manufacturer will develop 2, 3, and 8-yd. buckets similar to the CHC4 model within the near future.

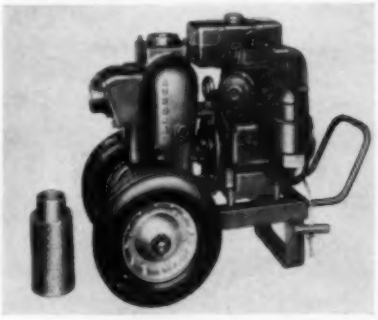
The circular-type bucket is equipped with a rectangular gate measuring 30 by 48 inches—or 10 square feet for the discharge opening, eliminating arching of concrete over the discharge throat. Overall height is 165⅞ inches while the outside diameter is 74⅛ inches. The bucket has been heavily reinforced to provide the ruggedness necessary to withstand rough usage.

The radically new hydraulic concrete bucket was given its first test at Table Rock Dam, near Branson, Mo., many months ago.

Portable Pumps

Manufacturer: Aurora Pump Div., New York Air Brake Co., Aurora, Ill.

Claims: A new series of portable, self-priming gasoline engine-driven contractor pumps has been introduced by Aurora. Designated series M, the five new models are quick priming, self-cleaning and have high head output. Maximum capacity of the smallest pump in the series is 105 gpm. The largest delivers



up to 351 gpm. Inlet and outlet connections range from 1½ to 3 inches.

Pump and engine are mounted on a common base, and because of the portability of the new units, they are ideal for operation remote from electric power source.

Models 5M and 8M are equipped with carrying handles or spring-mounted pull skids. Models 10M, 15M, and 20M are available with carrying frames, steel wheel or rubber tire carriage.

Crawler-Mounted Drill

Manufacturer: Thor Power Tool Co., Aurora, Ill.

Claims A new Thor rock drilling crawler, designated the MM-2 "Drill-cat," is entirely self-propelled with drill, mast and air power mounted for one-man operation.

The air-operated crawlers enable the rig to move over rough terrain and eliminate the need for labor crews to move the drills into position on road building projects, quarries, tunnels and other blasting jobs.

The new machine consists of Thor's 105M drifter rock drill and the BW-2 wagon drill mast mounted on crawlers; it is equipped with twin, reversible 7½-hp air motors. For added maneuvera-

Continued on page 56

"EASIER LOADING *than any others we tried*"

That's what operator Clarence Grasse says about the Allis-Chalmers TS-260 he operates on a cut-and-fill road job near Waubeka, Wisconsin.

It's the curved bowl bottom and offset cutting edge design that make the TS-260 easier to load. Dirt "boils" through the center of the load, keeps the load live, fills the bowl with 14-yard heaped loads time after time.

On road jobs like this one, the TS-260's short turning radius—a complete turn in only 30 ft—eliminates need for extra travel-to-turn areas, shortens cycle time, gets job done faster, easier.

Maneuverability and full-capacity loading are only two of many advanced-design features that make the TS-260 motor scraper outstanding in performance and dependability. See your Allis-Chalmers dealer for the full story now. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

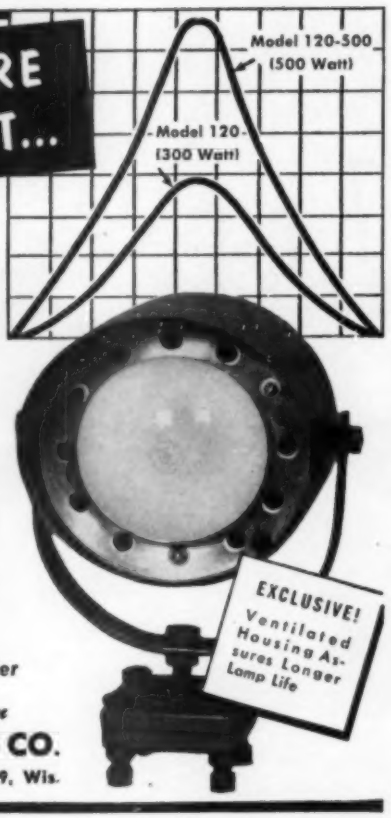
ALLIS-CHALMERS *Engineering in Action*

GET 59% MORE LIGHT OUTPUT...

From Model 120 500 Watt

STURDILITE
FLOOD LAMP

- Steps up night-time production —
- Adds to SAFETY! . . .
- Especially Adapted for Operations Such as Open Pit Mining, Stripping, Dredging, Excavating, Crushing and Mix Plants, Logging, Road Building, Drilling, Quarrying, Etc.



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Metal Spinning Division
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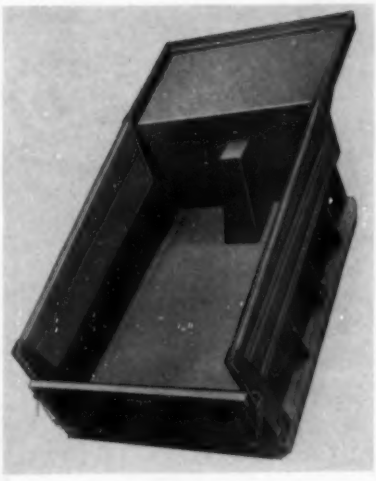

New Equipment . . .

Continued from page 54

bility and ease of operation, the rig also has a hydraulic boom to raise or lower the drilling mast with little effort by the operator.

The drill mast is equipped with convenient centralized controls for both drilling, feeding and hole blowing at full line pressure. The mast also features adjustable chain tension and heavy-duty shock absorbers to protect both chain

and mast from damage when the drifter is returned to the top of the mast.

Another feature of the "Drillcat" is a heavy-duty, easily operated steel centralizer for starting holes. A 5-hp rotary air motor operates ch in drive at infinitely variable feed from a two-inches-per-minute crawl to fast forward and return.

The rig is 6 feet 9 inches long and 6 feet wide. Boom length is 3 feet 8 inches. It weighs 3,000 pounds.

Tapered Dump Bodies

Manufacturer: Galion Allsteel Body Co., Galion, Ohio.

Claims: A new tapered sideboard and load-carrying cab shield combination, which improves load distribution and increases payload capacity has been announced by Galion.

Designed for use on Galion N and NF series dump bodies with Uni-scopic or Duo-scopic front-mounted telescopic hoists, the new tapered sideboards and load-carrying cab shield permit over-the-cab loading. This type of loading shifts the load center of gravity forward and places more weight on the truck's front axle. According to the manufacturer, forward shifting of weight allows more payload to be added, without raising the weight on rear or front axles above legal limits.

The tapered sideboards are available in various heights and lengths to suit body size and loading conditions. Minimum height is 6 inches and maximum height is 18 inches. Additional sideboard height may be attained through the use of standard Galion straight sideboards. All sideboards are shaped from 10-gauge hi-resistant steel. Also available is 8-gauge steel for severe service applications. Load-carrying cab shields are offered in sizes and types to meet individual job requirements.

Rubber-Tire Dozer

Manufacturer: LeTourneau-Westinghouse Co., Peoria, Ill.

Claims: LeTourneau-Westinghouse has developed a new 143-hp rubber-tired Tournatractor. The Model D unit is designed to meet the growing demand for a medium-size companion to the larger 208-hp Model C.

Because paving, bridges and rail tracks are unharmed by its big 18 x 25.00 low-pressure rubber tires, the "D" has unlimited mobility. This combined with a top speed of nearly 20 mph permits it to travel from job-to-job under its own power without hampering traffic. At work, the same abilities pay off by allowing it to run quickly between scattered assignments on sprawling contracts.

Its 4-cylinder, 143-hp diesel is teamed with a 5-speed earthmover type transmission. The result is a full range of speeds from 2.2 mph for tough dozing to 19.3 mph for travel.

The most unusual feature of the new Tournatractor is the planetary steering system which permits turns while maintaining full power on all four drive wheels. The system, which offers infinite advantages to the tractor operator in push loading or dozing by extending flexibility of the machine's push power,

is operated by air-pressure controls triggered by conventional steering levers. Needing no important operator attention, it adjusts sharpness of turn to forward speed automatically to provide safe, sure control under all conditions. At 2 mph it allows a sharp turn radius of about 9 feet while at about 20 mph the orbit extends to just under 100 feet.

Access plates are provided in all assemblies to speed servicing and maintenance. Most components can be removed from the "D" without disassembly of other elements. Normal lubrication takes only 10 minutes and 1,000 hour checks can be made in less than a half hour.

A number of work tools have been tailored to the "D" Tournatractor, including an 8-ft. bulldozer, an 8½-ft. snow plow and a double-drum power control unit.

Both the dozer blade and snow plow mount on the same push arms and use the same hydraulic control. As a result of this interchangeability, utility is extended at minimum additional cost.

The mechanical power control unit, which equips the "D" to handle scraper and other cable-controlled equipment, is rear mounted. Features of the unit include mechanical "pull-through" for natural "feel" and maximum "live" action provided by taking power off the engine ahead of the clutch.

Standard equipment for the new "D" includes: electric starting; head and tail lights; adjustable seat; hand throttles; fuel filter; muffler and all necessary meters and gauges. Cab with or without heater and defrosters is an optional extra.

Diesel Engine Oil

Manufacturer: Amalie Div., L. Sonneborn Sons, Inc., Franklin, Pa.

Claims: Amalie is marketing a new oil to meet the critical lubrication demands of presentday diesel engines.

X-L-O diesel engine oil is formulated from an Amalie-created diesel oil compound, called Protol, and a specially prepared Pennsylvania lubricating oil. It is said to reduce formation of carbon, gum and sludge and disperse and suspend any carbon and sludge deposits that do form, minimizing ring sticking, clogged jets and ports, and assuring maximum engine cleanliness. It minimizes varnish formation on cylinder walls and piston skirts.

ENGINEER'S TRANSITS

SAVE

26 POWER
HEAVY DUTY
MODEL T-26

ONLY
$345.00

EQUAL IN QUALITY TO TRANSITS SELLING FROM $650.00 to $750.00

A precision instrument. Minimum focus is 6½ ft. Magnification is 26x. Readings down to 20 seconds. MODEL T-18 is a Utility Model for only $189.50. Save over $300 on this brand new equipment. Atlas Transits are field tested and accepted by engineers, contractors, builders. Complete with Tripod and Accessories. Sold only on a money back guarantee. Non rated D&B firms — $25 deposit — balance C.O.D. Send to Dept. EE

NOW AVAILABLE—Modern repair and maintenance facilities. We feature the most accurate collimator service. Send your instruments regardless of make to REPAIR DIVISION, ATLAS INSTRUMENT COMPANY.

ATLAS INSTRUMENT CO.
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It's a Bucyrus-Erie Rock Grab for Speed – Safety – Strength

SPEEDY PICKUP — Bucyrus-Erie rock grabs pick up assorted sizes and shapes quickly — without need for drilling dog holes or jacking up rock to place slings.

SOLID GRABS — Rocks are held firmly by the jaws through action of the multiple-part rope hitch — the heavier the lift, the more secure the grip.

STRENGTH IN RESERVE — All Bucyrus-Erie rock grabs are conservatively rated — available in five sizes — 2½ to 20 tons capacity.

Investigate the speed and safety advantages of these dependable rock grabs. See your Bucyrus-Erie distributor. 29857C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

HEAVY CONSTRUCTION · SHORE PROTECTION · BREAKWATERS

Profitable sideline item on road jobs for Spencer is occasional taking of jobs which nobody else wants. Here crew installs rail.

Spencer . . .

Continued from page 37

amount of profit can be made, with little increase in overhead and supervision at the main office, picking up the small, unwanted jobs which occur on many jobs where earthmoving is involved. On highway projects, where sub-base production and hauling are standard items, there is also the installation of culvert pipe, placement of guardrails, and so on. Spencer has picked up a small labor crew for this work, along with a good foreman.

In this extracurricular activity, as in his main earthmoving forte, Spencer is displaying competence and ingenuity. Contractors rapidly are recognizing it.

Recently, at Swift Dam on the Lewis River near Cougar, Wash., Guy F. Atkinson Co. needed 3,000 cubic yards of precisely graded sand and concrete aggregates, delivered to a lining job at the outlet-diversion tunnel. It was important that the material be hauled fast, delivered on schedule and dumped in such a way that there would be no segregation of rock particles. "We'll get Spencer," said the superintendent. "He'll do it without trouble."

It was old stuff to George Spencer. He booted his truck drivers into high gear, bladed a clean, long dump area at Swift Dam so the aggregate could not mix with topsoil or weeds, and showed the drivers how to dump their loads in a heap without segregation. He didn't stack the material with a dozer, thus running the risk of mixing dirt into the aggregates. Instead, he used the Pettibone-Mulliken loader to recover in first-rate shape most of the material hauled in. Actually, only 75 cubic yards of the 3,000 yards was dirtied. Project officials were delighted, because no other method would have worked in that situation with as little waste.

Stunts like this are rapidly creating for the Vancouver contractor a reputation for good management, knowhow and ingenuity. Spencer, still small, is well on his way to the big-time contracting picture in the Pacific Northwest.

Old River . . .

Continued from page 28

cavation at the top prevents surface runoff from entering the excavation area. This is supplemented by two large drainage interception ditches on the excavation slope. These drain into two sumps. Collected water is pumped over the perimeter dike and cofferdam. The interception ditches were made large to collect slope drainage and store it temporarily so that smaller sumps and a more uniform pumping rate could be achieved.

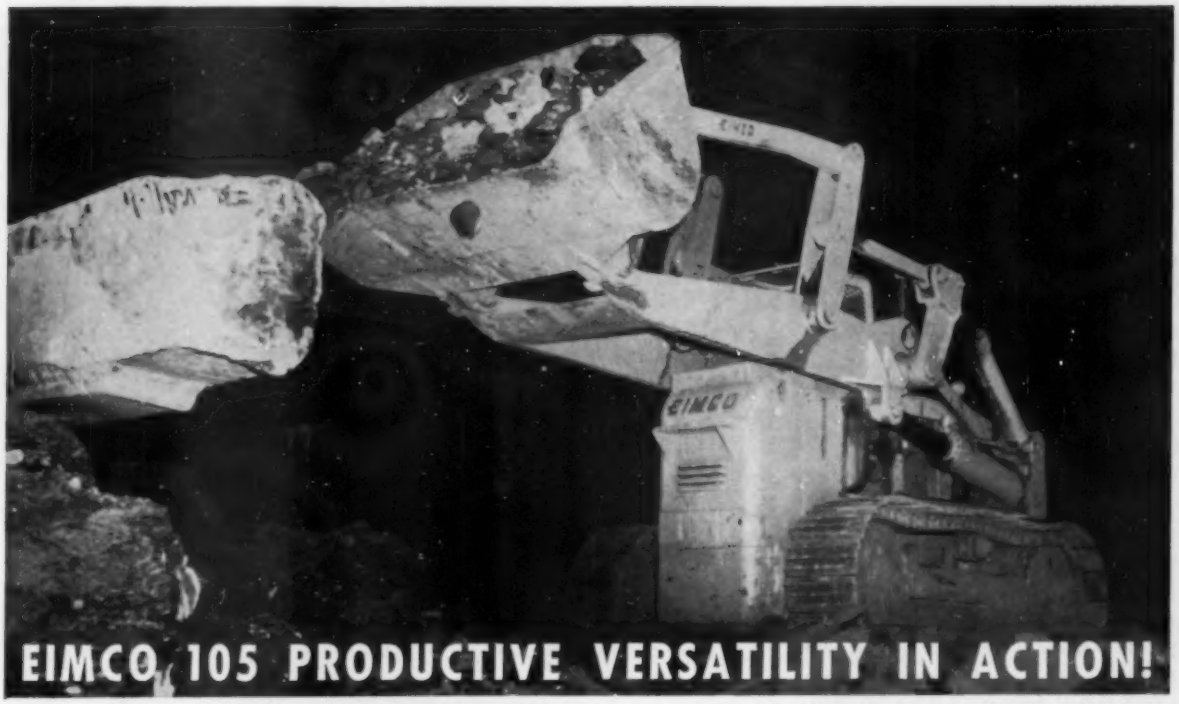
Installation of the dewatering system, relief wells and piezometers was performed under subcontract by the Independent Wellpoint Corp., Monroe, La.

Construction of the 7.3-mile long outflow channel from the low-sill structure into Red River is scheduled for an early start. The channel will have a bottom width of 900 feet at elevation —8.0 feet mean sea level near the structure and —10.0 feet mean sea level at Red River. Construction is to be carried out in four dredging contracts.

Clearing for the outflow channel began on June 29, 1956. The subcontract for clearing is held by Joe E. Fruend, Monroe, La. The amount of the contract is $196,331. In the first two months of clearing operations, a strip 2,900 feet wide was cleared along a two-mile length. Equipment then in use included two Allis-Chalmers 20 and two 21, one International TD-18 and one Caterpillar D4 and two D7 tractors.

One job-fabricated sawtooth snout blade and two bevel-type blades were being used to cut timber. Although specifications call for cutting off stumps one foot above ground, the contractor found that with bevel-type blades it was easier to cut the faulted hardwood encountered at ground level. The result is

Continued on page 60



EIMCO 105 PRODUCTIVE VERSATILITY IN ACTION!

NEW! FRONT END LOADER

Here's the latest addition to the 105 wide-range family of rugged earth-moving tools.

In loading applications where physical and haulage conditions make its use more practical . . . here is a front end loading mechanism that gives you extra strength for the most severe job.

Large, double-acting hydraulic boom cylinders provide ample power to hoist loads weighing up to 15,000 lbs. to full height. Boom and bucket controls may be operated simultaneously.

To fill the big (2½ yard) bucket, this loader develops 25,000 lbs. digging force at the lip. 40,000 lb. pry-out force and 40 degree bucket tip-back at ground level gets full bucket loads, minimizes spillage. It carries loads close and low for maximum stability.

It operates in 9' 6" headroom . . . discharges into haulage units up to 14'.

Exclusive features of the hydraulic system provide an extra margin of protection against mechanical delays.

Bulldozer

Dozer blade attachments are designed to make full use of the extra-production features of the 105. In broad usages such as cutting haul roads for logging outfits . . . pioneering in shale and hard rock . . . clearing fire paths for the Forest Service . . . the Eimco 105 Bulldozer has proven its high-capacity ability the world over.

All attachments are Eimco-built to standard SAE mounting dimensions for the basic 105 Tractor. This means extra performance from every attachment through independent track maneuverability . . . up front visibility . . . power shift operating ease . . . balanced design for maximum stability . . . quality built for dependable on-the-job service.

Excavating Loader

Where digging is extra tough . . . and haulage provisions can be adopted to take full advantage of overhead discharge — the time-proven 105 Excavating-Loader will give you **bonus** loading power at the bucket lip and **bonus** dumping speed to accelerate the entire cycle.

Unique contour of the rugged rocker arms . . . bucket design and smooth, steady flow of engine power transmitted to the bucket lip through the torque converter gets 39,200 lbs. of digging force right where you want it . . . in the pile. Awkward maneuvering to get into dumping position is eliminated in ideal overhead discharge applications.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

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Cleveland, Ohio Houston, Tex. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B-239

Old River . . .

Continued from page 58

a smooth clearing job. Hackberry, ash, and some red oak trees are being cut and shipped for timber. Most of the remaining oak and pecan is being stacked and burned on the site. Stumps are being poisoned with a mixture of DuPont ammate, water, diesel fuel, and an emulsifying agent.

The 12-man clearing crew worked a six-day week, one 12-hour shift a day, by special authority. The clearing job was scheduled to be completed by January 1.

13-Million Yd. Job

The initial dredging contract for the outflow channel was let on September 3, 1956 to the McWilliams Dredging Div. of Williams-McWilliams Industries, New Orleans, La. The contract, calling for the excavation of 13 million cubic yards, was for $2,316,860. Work was scheduled to begin in January, when stages in Red River were relatively high, making it easier to attack the riverbank in this area.

The inflow channel from the Mississippi River to the low-sill structure will be built after the structure is in place. It will have a bottom width of 1,000 feet at elevation —5.0 feet mean sea level and will be about a half mile long.

Supply contracts for gantry cranes and vertical-lift-type steel gates for the low-sill structure will be let during fiscal year 1957.

The overbank structure has been advertised and construction will begin during fiscal year 1957. It will be a controlled spillway of reinforced concrete with hinged timber panels for the control of overbank flows. It will have a gross length of 3,356 feet between training walls and will consist of 73 bays, each having a 44-ft. clear opening between piers two feet thick. The crest of the spillway weir will be at elevation 52.0 feet mean sea level. Each bay will be provided with 15 panels, each of which will be 2 feet 10½ inches wide.

Contractors School

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Learn how to figure labor, material costs on construction jobs. Write for 30 day free trial. CONTRACTOR'S SCHOOL, Box 12, Dallas, Tex.

The south abutment of the overbank structure will be located about 1,380 feet from the north abutment of the low-sill structure. The overbank structure will be about 3,000 feet from the Mississippi River in an area where the sand is relatively high and the clays are of uniform thickness and composition.

River Commission Supervises

Construction of the Old River Control Project is under the general supervision of the Mississippi River Commission and Lower Mississippi Valley Div., Corps of Engineers. Direct supervision of the construction work is being carried out by the New Orleans district, Corps of Engineers. Designs, plans and specifications for the two control structures were prepared in the division office. Colonel William H. Lewis is district engineer. The project engineer for the New Orleans district is Adolph Hedegaard.

In charge of work for the F & C Engineering Co. is Frank Mitchell. Charles Clifford is supervising excavation for the low-sill structure for Joe E. Fruend. E. J. Alexander is in charge of operations of the Independent Wellpoint Corp.

Coal Stripping . . .

Continued from page 23

one equipped as a dragline and the other as a shovel. Eventually, the shovel will be converted to dragline and then all of the stripping will be done by draglines.

The 110-RB dragline is fitted with a 100-ft. boom and operates a 6-yd. bucket at an 87-ft. radius. The machine strips the 50-ft. soft shale overburden at the rate of 220 to 250 yards per hour. The 110-RB shovel is engaged in removing the somewhat harder shale parting between the top and middle seams. Its output is about 350 yards per hour. Approximately 65,000 yards of overburden is removed per week. The front-end equipment of the 110-RB shovel is of rather novel design. The all-welded boom is in two sections, the lower half being a single-welded unit consisting of two side girders and two cross girders with castings for the boom foot and machinery welded in position. The upper portion of the boom is composed of two heavy-section beams, each carrying a boom point sheave. Two beam-type struts connect the apex of the lower

Continued on page 64

This Bucyrus-Erie 1½-yd. 38-B shovel loads rock at the base of Mt. Franklin in El Paso, Tex. It is owned by Standard Aggregates Co., El Paso.

Bucyrus-Eries Keep Things Moving on Major Highway Jobs

On highway projects in state after state Bucyrus-Eries are the backbone of the machinery fleet. When the going gets rough, when machine maintenance becomes a problem, Bucyrus-Eries furnish the necessary dependability to keep things moving at a steady clip.

Many of their steel parts, for instance, are cast in Bucyrus-Erie's own foundries under rigid quality control; this accounts for the ruggedness that minimizes maintenance time. Fewer working parts combined through superior design enable Bucyrus-Eries to deliver highest output week in and week out.

These moneymakers are available in a complete line of crawler-mounted models from ⅜ to 4 cubic yards (including the new 1-yd. 30-B) and in rubber tired carrier mounted Transit Cranes in 15-, 25-, and 35-ton capacity. Models through 4 cu. yds. are readily convertible to crane, clamshell, and dragline, plus dragshovel on machines through 2½ cu. yds. For lighter crane work, there are 5-ton and 10-ton capacity Hydrocranes.

Your Bucyrus-Erie distributor will be glad to give you information on the size machine that fits your requirements. See him today.

319E57C

Bonus Quality Many gears, pinions, driving tumblers, shaftings, and other parts that go into Bucyrus-Eries are heat-treated in electric furnaces for specified degrees of toughness and hardness. The steel castings are poured in Bucyrus-Erie's own furnaces so they can be held to highest standards at every stage of development.

BUCYRUS ERIE

South Milwaukee
Wisconsin

In construction of the Boston Southeast Expressway, this Bucyrus-Erie 3-yd. 71-B shovel loads trucks with granite, rock and dirt. Marinucci Bros. & Co., Inc., Boston, is the owner of this machine.

P. T. & L. Construction Co., Paramus, N.J., used this Bucyrus-Erie 2-yd. 51-B shovel to cut down high ground for fill to be used for the Garden State Parkway in New Jersey.

Digging fill for the Georgia State Highway Department is this Bucyrus-Erie ½-yd. 15-B shovel, owned by W. J. Coulter, St. Elmo, Tenn. The machine is working near Flintstone, Ga., and the material being removed is hard shale.

NOT in the Contract

The Texas oilman, barreling along the highway in his Cadillac, screeched to a stop to pick up a hitchhiker. Climbing in, the young fellow noticed a pair of thick-lensed glasses lying on the seat.

As the telephone poles began flying by in a blur, he grew more and more uneasy. "Beg pardon, mister," he finally ventured, "but don't you think you ought to wear your glasses while you're driving?"

"Shucks, son, don't let that bother you," drawled the Texan. "This here windshield is ground to my prescription."

"Do you have to keep the women inmates separate from the men?" inquired the visitor at the asylum.

"Sure!" replied the attendant. "These people here ain't as crazy as you think!"

Irate Golfer: "You must be the world's worst caddie!"

Caddie: "Hardly. That would be too much of a coincidence."

A drunk lying on the barroom floor began to show signs of life so one joker smeared a little limburger cheese on his upper lip. The drunk rose and walked out the door. In a few minutes he returned. Then he left again only to wobble back in soon after. Shaking his head with disgust he said, "It's no use. The whole world stinks."

Vicar (trying to patch separation): "Did your husband love you very much?"

Parishioner: "Love me? He wouldn't even leave me to go to work."

A bad tempered driver was always cussing out other drivers, even in front of his five-year-old daughter.

One Sunday, the mother took the moppet for her ride, leaving the father home. When they got back, the infant said: "We had a wonderful ride, Daddy. We saw cows and chickens and pigs and little lambs. And, you know what? We didn't see a single bastard!"

First Salesman: "Say, Jim, I had a marvelous day; made lots of friends for the company."

Second Salesman: "Me, too. I didn't sell anything either."

"Yes, I telephoned your company for a big nut, but they didn't have to overdo it!!"

An old man had a set of monkey glands installed in his system and shortly thereafter was married. In due time his wife came to labor and the good old man waited outside the door. When the doctor opened the door, he besieged him: "What is it? A boy or a girl?"

"Don't be so impatient," the doctor urged. "Wait 'til it comes down off the chandelier and I'll tell you."

"Were you ever bothered by athlete's foot?"

"Once, when a football player caught me out with his girl."

A famous maestro had a tough time deciding whether to marry a beautiful but dumb girl or a rather painful looking creature with a beautiful voice. Art finally triumphed. He married the soprano. The morning after the nuptials, he woke up, looked at her, and said, "For Pete's sake, SING!"

Ad in paper: "Girl needs a job. Is willing to struggle if given opportunity."

The air stewardess liked her job. "It gives me a chance to meet so many men," she explained.

"Wouldn't you be able to meet a lot of men in another job?" asked her friend.

"Not strapped down," was her reply.

A woman who was very ill said to her husband, "If I should die and you should marry again, promise me one thing: that you'll never let your second wife wear my clothes."

"Of course I won't," said her husband indignantly. "Besides, they wouldn't fit her."

A mousy little man was frightened silly of his boss. One day he told a fellow worker he was sick. His friend suggested he go home.

"Oh, I couldn't do that."

"Why not?"

"The boss would fire me."

"Don't be silly. He'll never know. He's not even here today."

Finally the man was convinced and went home. When he got there he looked in the window and saw his boss kissing his wife. So he ran all the way back to the office.

"A fine friend you are!" he said to his co-worker. "I nearly got caught!"

Middle-aged diner to blonde seated alone in a restaurant: "Would you care to join my expense account?"

Heaped loads up to 25 cu. yds. were easily handled in fast time by this DW21-No. 470 Lowbowl Scraper for L. G. Arnold, Inc. Other Caterpillar-built units in the company's line-up include a D9 used as pusher; one non-current DW21; two D8s; two No. 12s; one D6 with tamper; one D7 with Bulldozer and a No. 80 Scraper.

"OUTPRODUCED BY FAR ANY OTHER MACHINES ON THIS JOB"

Phil Dudenhoefer, grade foreman, L. G. Arnold, Inc., Eau Claire, Wisconsin

CAT* Lowbowl Scraper, push loaded by a D9, set the following pace on relocation of U. S. 53, Wisconsin:

1. **Averaged 12 to 15 minutes a trip with heaped loads on a three-mile round-trip haul.**

2. **Loaded sandy gravel in 70 seconds and topsoil in 45 seconds.**

Here's more proof that Caterpillar Lowbowl Scraper design really pays off on the job. The proof comes from F. L. Carr, Vice-President, and Phil Dudenhoefer, grade foreman, of L. G. Arnold, Inc.

Quoting F. L. Carr: "The new DW21 and D9 pusher have more than lived up to all of our expectations. The lowbowl design of the new scraper has even improved the easy loading feature of Caterpillar-built hauling equipment."

Quoting Phil Dudenhoefer: "In my 28 years in this business, I've seen all sorts of earthmoving machines, and Caterpillar beats them all. As grade foreman, I've got both feet right down in the dirt where I observe and record the output and performance of every machine. I'll say this: the DW21 and No. 470 Lowbowl Scraper with the D9 pushing outproduced by far any other machines on this job!"

The job: The relocation of about 10 miles of U. S. 53 between Eau Claire and Chippewa Falls, which involved the handling of 78,059 cu. yd. of borrow (sandy gravel), 42,901 cu. yd. of unclassified and 93,272 cu. yd. of overburden (topsoil). The Caterpillar DW21-No. 470 Lowbowl Scraper (struck capacity 18 cu. yd.), carrying heaped loads up to 25 cu. yd., made four trips an hour on a three-mile round-trip haul. Loading time, with the D9 pushing, averaged 70 seconds for sandy gravel and 45 seconds for topsoil.

On job after job, under varying conditions, the Cat Lowbowl Scraper is showing its heels to other earthmovers. Your Caterpillar Dealer, who backs you with prompt service, will be glad to show you *facts* and *figures* comparing its performance with other units.

For *proof* that it will pay you to put DW21-No. 470 Lowbowl Scrapers on your job, see him today!

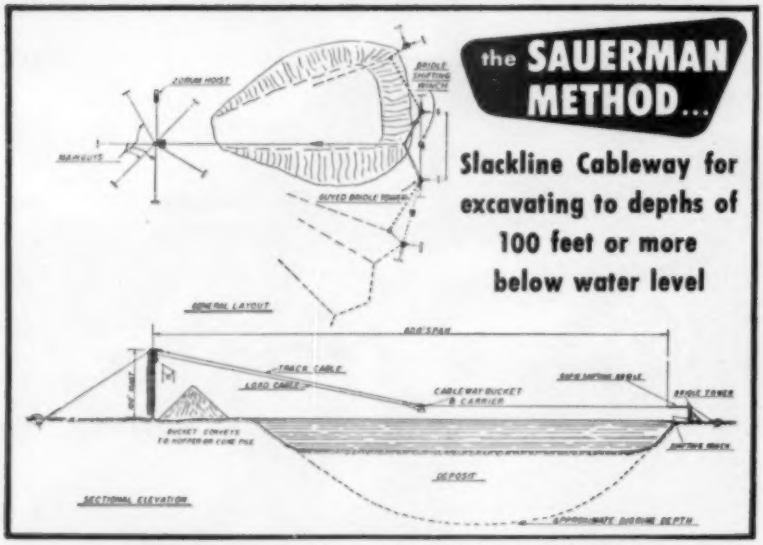
Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

WANTED— THE HARD WORK

HOW TO DO A BETTER UNDERWATER EXCAVATING JOB



Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.

Cableway at Cabinet Gorge Dam digs and hauls from tailrace 1000 ft. away. (Full details in Sauerman News No. 143.)

New York gravel producer switched to cableway for underwater operation of his pit. Average haul is 600 ft. from a 50-ft. depth (Sauerman News No. 141).

You can remove more underwater material with a long reaching Sauerman Slackline Cableway. On job after job this machine has proved to be the most efficient for this type of operation. It is especially effective where the material to be excavated has good depth and will flow to the bottom of the cut. For shallow deposits or non-caving material a rapid shifting device is used to change the line of operation.

One man controlling the hoist digs, conveys and elevates from deposit to plant over spans of 1000 ft. or more . . . across streams, lakes, bogs or deep pits. The powerful load line pull insures digging penetration. Tensioning the track cable lifts the bucket which is inhauled at high speed and dumps automatically. Gravity return completes the fast operating cycle. Bucket capacities range from ⅓ to 3½ cu. yds.

To get fast, economical long range excavation, and the shortest, most direct way from pit to pile use a slackline cableway. Contact Sauerman for specific recommendations. No obligation. Request Catalog C, showing detailed specifications and photos of slackline cableways in action on all types of deep digging jobs.

SAUERMAN BROS. INC.

622 S. 28th AVE. | BELLWOOD, ILL.

Crescent Scrapers • Slackline and Toutline Cableways • Durolite Blocks

Coal Stripping . . .

Continued from page 60

section to the A-frame of the machine in a triangular construction. The dipper handle is a single, large-diameter tube and is crowded out or retracted by a positive rope crowd driven by machinery located at the front of the revolving superstructure. The 4½-yd. dipper combines welded steel fabrication and steel castings in its construction, the dipper back being welded integral with the handle. Both machines have variable voltage (Ward Leonard) electric control, the direct current motors for the individual motions obtaining their power supply from DC generators driven by the diesel engine. In each case the engine is a Ruston-Paxman 12 RPHN II developing 528 hp at 1,200 rpm.

A 54-RB dragline with 70-ft. boom and an appropriate-size dragline bucket to fit the work at hand also assists in the stripping, but half the time is engaged in rehandling spoil from the 4½-yd. shovel.

The coal is excavated and loaded by 22-RB ¾-yd. diesel shovels. Loading is at the rate of 60 tons per hour. The coal is transported to two different disposal points approximately 11 miles from the site. There are three separate coal seams—the upper, 12½ inches thick; the middle, 27 inches; and the lower, 15½ inches. The parting between each varies from eight to 16 feet in thickness.

Restore Site

In the first nine months the site was worked, approximately 200,000 tons of coal was obtained. A total of 21 months of coaling was anticipated. Complete restoration of the site may be carried out within three months after coaling operations cease. The total labor force is 60 men, including maintenance crew and surveying staff.

Scotland provides what will eventually be the largest opencast coal site in the United Kingdom. Situated on the borders of Fife, the site was recently awarded to Whatlings Ltd. of Glasgow and at present is only in the very early stages of development. This site may produce 20 million tons of coal.

Other sites in the United Kingdom are planned for the future and these, together with the size and capacity of those already in active operation, will insure the supplementing of deep-mined coal for many years.

30 mph "C" hauls shovel rock

Babler Brothers, Eugene, Oregon, used "C's" with rear-dump bodies on this 160,000-yd. 7-mile relocation of U.S. 99 near Anlauf. All-steel body easily withstood shocks of loading big-chunk rock. Short 14'4" turn radius speeded positioning at both shovel and dump.

with 22-ton rear-dump

Here's just *one* profitable use for versatile, 208 hp electric-control C Tournapull prime-mover. Coupled to 22-ton rear-dump trailing unit, this 30 mph prime-mover becomes a big-production hauler. Rig can be operated at top speed, with complete safety, because it has 3763 sq. in. braking surface — *more on one wheel than most haulers have on all four.* Holding action of powerful 4-wheel, disc-type air brakes, plus *front-wheel drive,* let it back safely to edge of bank, dump load clear to save dozer clean-up. Simple electric hoist (no troublesome hydraulics) tips body to vertical position. Smooth, clean, streamlined bowl clears loads instantly. Big 8'9" x 10'10" top opening speeds loading from shovel, dragline, or loader . . . reduces spillage. When you have no shovel work, money-saving interchangeability with scraper *doubles* Tournapull's earning capacity.

...then converts for scraper dirt

with 18-yd. scraper

For less than 25% of the cost of original unit, rear-dump body interchanges with a low, wide 18-yd. Fullpak LeTourneau-Westinghouse electric-control scraper. All you need is the scraper body — wheels, tires, brakes, and controls can be switched. This substantially reduces the cost of unit interchangeability. Big 24.00 x 25 tires, all-around, assure ample flotation in mud. Constant-pull, power-transfer differential also reduces weather delays . . . gives positive traction on soft banks and slick grades. Thus, scraper and rear-dump keep your "C" prime-mover earning all year 'round. Other auxiliary hauled units —including a 16-yard Bottom-Dump, 20-ton Flat-Bed and 20-ton Crane — further save time and reduce equipment investment per job. This money-saving Tournapull package is available also in *larger* and *smaller* sizes. Write today for facts on performance, price, and delivery!

Brown and Lambrecht, Joliet, Illinois, used their 3 "C" prime-movers with fast-loading 18-yd. Fullpak scrapers, for widening 7 miles of U.S. 66 near Chicago. Units moved 180 pay yards of clay and topsoil hourly over 3-mile cycles. Scrapers can be interchanged with rear-dumps.

Tournapull—Trademark Reg. U.S. Pat. Off. Fullpak—Trademark RP-1332-G-b

LeTourneau-**WESTINGHOUSE** Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

New Trade Literature

Subject: **Traxcavator Operation**

Content: Caterpillar has released an *Operator's Guide* presenting basic information on the operation of Traxcavators and the jobs they can do. The illustrated, four-color booklet describes in simple terms the way to get the most work out of a Traxcavator with the least effort. Operating components on all three Traxcavator models are pictured. Each phase of the complete operating cycle is explained. Special emphasis is placed on the bucket indicator, a device which enables the operator to keep an accurate control of the bucket position. The use of Traxcavator attachments is illustrated. Ask for form 32109-DE636.

Where to get: Caterpillar dealers or Caterpillar Tractor Co., Peoria, Ill.

Subject: **Vickers Hydraulic Systems**

Content: A new 20-page catalog describes oil-hydraulic systems and components for all mobile equipment in the truck, construction machinery and material handling industries. The new catalog contains discussions of performance characteristics, design features, construction details and applications for the Vickers line of single and double vane pumps, power packs for mobile equipment, multiple unit valves, relief valves, reservoirs, fluid motors and power steering boosters. Each section includes photographs, cutaway views and performance curves for the units under discussion. Specification tables show unit weight and delivery ratings for various recommended operating speeds and pressures. Phantom drawings in the new catalog show typical mobile equipment hydraulic systems for trucks, motor graders and tractors. Circuit diagrams are used to illustrate typical power supply arrangements for power steering booster installations. Ask for bulletin M5101A.

Where to get: Vickers Inc., Box 302, Detroit 32, Mich.

Subject: **Air Compressors**

Content: A new 20-page catalog covers the Kellogg line of ⅓ to 20-hp air compressors for automotive and industrial use. Well illustrated, the booklet gives complete specifications on single and two-stage models, portable models, tanks, pumps and accessories. Useful charts, data, and information on compressed air are also included.

Where to get: Kellogg Div., American Brake Shoe Co., Rochester 9, N. Y.

Subject: **Detroit Diesel Units**

Content: Detroit Diesel industrial power units and fan-to-flywheel engines for use in hundreds of standard and special applications are fully described and illustrated in a new brochure just released. Horsepower ratings, dimensions and accessory information on single and multiple-engine models ranging from 56 to 761 rated brake horsepower are given.

Where to get: Detroit Diesel distributors or Detroit Diesel Engine Div., General Motors Corp., Detroit 28, Mich.

Subject: **Bridge Superstructures**

Content: *Standard Plans for Highway Bridge Superstructures* (1956 edition), a Bureau of Public Roads publication, is now available. The 52-page book comprises 18 series of standard plans which furnish details for a variety of types of highway bridge superstructures. Entirely new in this edition are three series for pretensioned precast concrete and five series for structural timber. Carried over from the previous edition (1953), with revised and modernized designs, are series for I-beams, riveted or welded plate girders, reinforced concrete slabs, T-beams and box girders, precast concrete decks and post-tensioned precast concrete I sections. The designs are based on two widths of roadway: 24 feet with H15-44 live load and 28 feet with H20-S16-44 live load. The ranges in span lengths, from 11 to 140 feet, are based on the economy and suitability of each particular type of superstructure. Price is $1.75.

Where to get: Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

"Any danger if I watch?"

Subject: **Pneumatic Drill Accessories**

Content: A 20-page catalog describes Brunner & Lay carbide rock-bits, drill steels and pneumatic tool accessories, including moil points, sabur points, clay spades, and asphalt cutters. Each product is illustrated and accompanied by complete specifications. Ask for catalog #756.

Where to get: Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill.

New Movies . . .

Subject: **Blasting Problems**

Content: Contractors who have a public relations problem in blasting in and near populated areas might well be interested in a new 25-minute motion picture, *We're Blasting Near You.* The color film, produced by the Atlas Powder Co., describes the precautions that blasters take to prevent accidents and protect private property. Emphasis is placed on modern methods of controlled blasting which reduce the hazards of ground vibration, concussions and flying rock. In addition to the film, Atlas also will provide a kit containing material and suggestions to assist in the successful planning, promotion and execution of a program featuring the film.

Where to get: Explosives Development Section, Atlas Powder Co., Wilmington 99, Del.

Subject: **St. Lawrence Seaway**

Content: *The Eighth Sea,* a new color and sound film presented by Caterpillar, tells the dramatic story of the planning and development of the St. Lawrence Seaway. The film is narrated by Walter Cronkite, American television commentator. Cronkite takes viewers over the Seaway's entire length, from the Atlantic Ocean to the Great Lakes. The film runs 28½ minutes.

Where to get: Caterpillar dealers or Advertising Div., Caterpillar Tractor Co., Peoria, Ill.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Bucyrus-Erie 200-W diesel dragline shipped in 1950; 125 ft. boom, 6 yd. heavy duty and 7 yd. light weight buckets; some spare parts included; good mechanical condition. Location Melbourne, Australia. Box 3682

2-W Monighan Walking-Type Dragline #492, 85' boom, 2-year old D-13000 Caterpillar diesel engine #4S685, 2-yard Hendrix bucket, 2½ yard Page bucket, some spare parts, fair operating condition. Box 3708

SMALL SHOVELS, CRANES, DRAGLINES—UP TO 2½ YDS.

One Bucyrus-Erie Model 41-B, 3 motor AC electric shovel, serial no. 10796, 1½-yd. dipper, cat-mounted, 26" treads; 22'6" boom, 15' handle; good operating condition. Many replacement parts for swing and crowd machinery recently installed or available. Located Mid-West.

One Bucyrus-Erie Model 52-B, Ward-Leonard electric shovel, serial no. 11395, equipped for 3 phase, 60 cycle, 440 volt operation; 2¼ cubic yard dipper, 30' boom, 18' handle; equipped with power boom hoist and electric light plant. Well maintained and in good operating condition. Caterpillar units recently overhauled. Located Mid-West.

One Bucyrus-Erie Type 1030, two-motor A.C. shovel serial no. 10655. Built as tunnel shovel, with short cat frame and 19" wide treads. Tunnel boom and rock dipper in excellent condition, dipper handles fair. Machine presently equipped standard shovel front with ¾ yard dipper, fair condition. Located Mid-West. Box 3710

Osgood Model 200 with ½-yd. backhoe stick and bucket, also crane boom and ½-yd. drag bucket and frost breaker, make offer, in good running condition, 3½ years old and overhauled. Also, D4 endloader, overhauled, in good running condition. RIEMER BROS., INC., 9088 W. Waveland, Schiller Park, Ill. Phone GLadstone 5-6330.

Manitowoc Model 3500 Stripping Shovel, Serial #3602; 45' boom, 34' sticks; 2-cu. yd. dipper; Cat D-17000 diesel engine, replaced new in 1951; machine in excellent condition, ready for work and may be inspected at our mine near Nelsonville, Ohio. Sunnyhill Coal Company, Columbus, Ohio. Phone CApital 4-8222.

Bucyrus-Erie Model 10-B, ⅜-cu. yd. drag-shovel (backhoe) on crawlers. 6 cylinder Buda gas engine. First class condition.
F.O.B. Louisville, Ky. $9,800

Bucyrus-Erie Model 29-B, 1-cu. yd. shovel, powered by Cat diesel engine, in operating condition.
F.O.B. Louisville, Ky. $2,500

Bucyrus-Erie Model 38-B, 1½-cu. yd. shovel, powered by Cat diesel engine, two years old, first class condition.
F.O.B. Frankfort, Ky. $37,500

"Quick-Way" Model L, ½-cu. yd. with 40' boom and shovel; gas engine, mounted on White half-track. First class condition.
F.O.B. Louisville, Ky. $7,000

ATTACHMENTS

Bucyrus-Erie 10-B, ⅜-yd. shovel front ....$ 850
Bucyrus-Erie 15-B, ½-yd. shovel front 1,275
Bucyrus-Erie 22-B, ¾-yd. shovel front 2,500
Write, wire or phone:

JIM WADDELL
BRANDEIS MACHINERY & SUPPLY CO.
Brook & Warnock Sts. MElrose 7-4741
Louisville, Kentucky

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

FOR SALE

Draglines and Cranes

1201 Lima Dragline, 85', 3-yd.
955 P&H Dragline, 90', 2½-yd.
54-B Bucyrus-Erie Drag, 85', 2½-yd.
1001 Lima Dragline, 80', 2½-yd.
802 Lima Cranes
3000-B Manitowoc Cranes

Shovels and Combinations

1201 Lima Comb. Shovel-Crane
54-B Comb. Dragline-Crane
54-B Comb. Shovel-Dragline
25 Northwest Comb. Shovel-Drag
80-D Northwest 2½-yd. Shovel
44 Lima 1 yd. Backhoe
LS-85 Link Belt 1-yd. Shovel
320 General ¾-yard Shovel
34 Lima ¾-yd. Shovel
22-B Bucyrus-Erie Backhoe
Unit 1020 ¾-yd. Shovel—1 Yr. Old

Truck Cranes, Euclids, Drills, etc.

Bay City, Lorain, P&H & Osgood Truck Cranes
Euclid Trucks — 27FD, 18FD, 8TD, 36FD, 82FD, 13TD, 14TD, 63TD
600 Reich Heavy Truck Mounted Rotary Air Drills
58-BH Joy Champion Rotary Air Drills
42-T, 29-T & 27-T Well Drills
Davey Rotary Truck Air Drills
Mayhew Rotary Truck Air Drills
Portadrill Truck Mounted Air Drill
Garwood, LeTourneau, Caterpillar, Euclid & Bucyrus-Erie Scrapers
Huber 3-5 ton Tandem Roller
Buffalo-Springfield 10 ton Roller
International Bulldozers
Caterpillar & Allis Chalmers Dozers, Front End Loaders, Graders, Carryalls
Shovel, Drag, Crane & Backhoe Attach. —Drag & Dipper Buckets for most makes and Models

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

88-B Diesel Dragline, Cummins, model LRI engine, 110' boom, high A-frame, extra counterweight, standard lighting equipment, independent power boom hoist, Caterpillar mounted, long flat treads 54" wide. Machine about 3½ yrs. old, offered at attractive price. Box 3712

SMALL SHOVELS, CRANES, DRAGLINES — UP to 2½ YDS.

Bucyrus-Erie 10-B crane, gas engine, Serial #14448, AS IS.
Price F.O.B. Greensboro, N. C. $1,500

Osgood Model 200 crane, gas engine.
Price F.O.B. Greenville, N. C. $4,000

Allis-Chalmers HD-16A diesel crawler tractor with new AC Model 16BDC and Gar Wood 281.
Price F.O.B. Greensboro, N. C. $17,500

Jaeger 600' compressor with Murphy diesel engine, on 4 pneumatic tires.
Price F.O.B. Greensboro, N. C. $5,500

E. F. CRAVEN COMPANY
Greensboro, N. C.

Unit Crane Co. truck crane with boom, model No. 1357, 1958, with boom extension, cable and also backhoe attachment. Serial No. 48493. Charles Simkin & Sons, Inc., 95 New Brunswick Ave., Hopelawn, N. J.

P & H 1055LC, 4-yd. dragline, 100' boom, using 3-yd. bucket; powered with Buda diesel engine, super charge 6-DCS-1879, in excellent condition. Quality Lignite Co., Box 807, Minot, N. D.

MISCELLANEOUS EQUIPMENT

New 18" dredging pump, rectangular cross section casing, high alloy steel liners, high alloy cast steel 4 van runner; spare liners Box 3696

Complete shovel attachment for Bucyrus-Erie 54-B with 2½-yd. dipper. For price and other details, write:

F. M. REEVES & SONS, INC.
Pecos, Texas

Shovel front $275, for Bucyrus-Erie 10B, like new condition. Bargain worth $800. Counterweight $100. 1,000 lbs. used parts $75. for 10-B. 1625 E. Kearney, Springfield, Mo.

Caterpillar D-8 Tractor, s/n 2U 6894 (excellent condition). As a sideboom only: $12,500. As a hydraulic angle blade tractor only: $13,500. As a combination angle dozer and sideboom: $15,500. Location: Merchantville, N. J. EDWARD H. ELLIS & SONS, INC., Route 70 & Harvard Ave., Merchantville 10, N. J. Phone Day—Merchantville 8-4610, Night—Yellowstone 1-1693.

Wylie Model PM-215 Patchmobile portable asphalt mixing plant on two pneumatic tired wheels with Wisconsin engine; new unit used several demonstrations only; excellent bargain.
S. M. CHRISTHILF & SON, INC.
Timonium, Maryland VAlley 5-5100

EQUIPMENT WANTED

Best buy for cash Bucyrus-Erie 54-B or Manitowoc #3900 dragline. Tetyak-Young Constr. Co., 1025 Mill St., Kansas City, Kans.

Notes from the Manufacturers

Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., has announced election of Boyd S. Oberlink, tractor group vice president, to the firm's board of directors. Oberlink has been group vice president since January 1956. Prior to that he was vice president and general manager of the construction machinery division. The firm has also named L. C. Daniels as general manager of the Buda Div., tractor group, and Owen J. Higgins as general manager of the Harvey (Ill.) works where the Buda material handling equipment engines and generator sets are manufactured.

Baroid Div., National Lead Co., P. O. Box 1675, Houston, Tex., has appointed C. M. Finlayson as manager of Bentone sales. Finlayson joined Baroid in 1946 and worked in the Mellon Institute on the development of Bentone. He will join the firm's general offices at Houston in early spring.

Blaw-Knox Co., Pittsburgh 22, Pa., has appointed Paul J. Wolfert sales manager of its Construction Equipment Div.

Detroit Diesel Engine Div., General Motors Corp., Detroit, Mich., has expanded its administrative sales and service facilities by establishing regional offices in six key cities throughout the country. Headed by a regional manager and staffed by sales, sales engineering, service and office personnel, each office will coordinate sales and service efforts in its region. In charge of the new districts are the following regional managers: L. A. Steele, New York, N. Y.; R. W. Phillips, Atlanta, Ga.; J. C. Campbell, Detroit, Mich.; D. E. Schwendemann, Chicago, Ill.; Eric Sutton, Dallas, Tex.; and R. L. Burpee, San Francisco, Cal.

BUCKET FULL OF PROFIT!
Omaha Dragline Buckets eliminate unnecessary weight which makes room for a bigger payload. A high arch gives more clearance for digging and dumping. Nearly 50 years of "know-how" enables Omaha Dragline Buckets to pass all actual field tests. You can't buy a better bucket!
Write today for catalog giving specifications for four types available.
OMAHA
DRAGLINE BUCKET
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.

Harnischfeger Corp., Diesel Engine Div., Crystal Lake, Ill., has named Rental Service Co., 4605 N. 4th St., Philadelphia, Pa., as a distributor in the tri-state area of Delaware, Pennsylvania and New Jersey. The firm will offer small P&H industrial diesel power units in 2, 3, 4 and 6-cylinder models ranging up to 280 hp, and also diesel-powered electrical generator sets.

International Harvester Co., Construction Equipment Div., 180 N. Michigan Ave., Chicago 1, Ill., has promoted Ralph G. Greer to manager of sales. He succeeds the late I. P. Payne, who died January 14. Leslie J. Lange will become assistant manager of sales, the post formerly held by Greer. Other personnel changes in the division include the following appointments: R. F. Crowel, territory manager in the central region, which includes Wisconsin, Michigan, and Illinois; W. H. Tudor, territory manager of the plains region, serving North and South Dakota and parts of Nebraska; M. E. Kline, territory manager in the eastern region comprised of Massachusetts, Rhode Island, New Hampshire, Maine and Connecticut; and H. C. Barlow, manager of western region, to cover parts of Idaho, Washington, Utah and Montana.

Leschen Wire Rope Div., H. K. Porter Co., Inc., 300 Park Ave., New York 22, N. Y., has named Emmett H. Mann vice president and general manager. Until his present appointment, he held a similar post with the Alloy Metal Wire Div. Leschen also announced an expansion program which will be completed this year at a cost of $1½ million. Leschen will have its own wire drawing equipment to integrate the production of wire rope.

LeTourneau-Westinghouse Co., Peoria, Ill., has appointed two new sales representatives. C. R. (Chet) Martin will become district representative in the western half of Pennsylvania and the entire state of Virginia. W. T. (Bill) Kind will serve as district representative in the Pacific Northwest sales region. His territory includes the states of Washington and Oregon, the northern panhandle of Idaho, a section of northern California and all of Alaska and British Columbia.

Are you aware of the BIG THREE in CAT* bellows seals for idlers, track rollers and final drive? You get special, long-lasting FACING MATERIAL . . . just the right amount of CONTACT PRESSURE at the mating surfaces . . . and HEAVY DUTY DIAPHRAGMS to resist bursting and tearing. Each BIG THREE feature was *developed* and *proved best* for Cat-built Tractors. If it's a "look-alike" seal, who knows? Be sure to get parts you can trust—from your Caterpillar Dealer. He always has *exactly* the part you need.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

SEEPAGE WATER ON ST. LAWRENCE SEAWAY CONTROLLED WITH EFFICIENT PUMPING

These two Marlow self-primers pump water from a collecting basin up over a 30-foot bank to discharge it into the St. Lawrence River.

This 10-inch, engine-driven Marlow self-priming pump and a companion Marlow, that was mounted on a raft, operated on a 24-hour schedule to control seepage water.

Marlows Work 24 Hours a Day to Keep Seaway Excavation Workable

Before starting work on the main channel improvement at Galop Island in the St. Lawrence River, it was necessary to reduce the speed of flow by diverting water through a relief channel. This channel was dug on the American mainland near Red Mills, New York. When the excavation was started, a cofferdam was built at the upstream end of the job to hold back the water until the work was completed.

Seepage water became a critical problem as the digging progressed to a grade below the level of the river. To control the seepage, Morrison-Knudsen Co., Inc., installed two big Marlow self-priming contractor's pumps. The pumps were located at a collecting basin at a low point of the excavation. One of the skid-mounted, 10-inch pumps was mounted on the bank, while the other engine-driven unit *was placed on a raft that was floated in the basin!* Both pumps were used during peak periods to carry water up over the 30-foot embankment and into the river. While the pumps have a combined capacity of 360,000 GPH on continuous service, they can actually handle up to 400,000 GPH in emergencies.

In addition to a complete line of AGC rated self-priming centrifugal pumps, Marlow also builds the famous "Mud-Hog" diaphragm pump that handles muddy and trash-laden liquids. All these pumps are readily available from any of the three strategically located Marlow plants. Look for the heading "Marlow Pumps" in the "yellow pages" of your Classified Telephone Directory or ask your Marlow dealer about Marlow's contractor's pumps.

Marlow PUMPS

6-372

DIVISION OF

BELL & GOSSETT CO.

Midland Park, N. J.

Morton Grove, Illinois Longview, Texas